MODULE FOR REFRESHER COURSE ON

EMERGENCY OBSTETRIC CARE

KERALA 2010

NATIONAL RURAL HEALTH MISSION, KERALA
KERALA HEALTH SERVICES
KERALA FEDERATION OF OBSTETRICS & GYNECOLOGY

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Module for Refresher Course on
Emergency Obstetric care Kerala 2010

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Messages

In view of the findings of recent NFHS and DLHS surveys, renewed efforts are necessary to improve the maternal and child health status in Kerala. In spite of the fact that majority of the deliveries are happening in institutions, overcrowding in major institutions result in dilution in the quality of care. Strengthening the Primary Health Centres as well as the Community Health Centres can take away the extra load from the tertiary care institutions, at the same time will improve access to basic care for the wide majority of public. To reverse this trend of flow of people to the tertiary care centres, it is mandatory to strengthen the obstetric services in these primary care centres.

The Government and the National Rural Health Mission are committed to improve the infrastructure as well as the quality of care in the primary as well as Community Health Centres (CHCs). As a first step we are targeting selected CHCs in the state to achieve this objective. The present training, jointly organized by the NRHM Kerala (Arogyakeralam) and Kerala Health Services and executed by the Kerala Federation of Obstetrics & Gynaecology, for the doctors and the staff nurses working in Community Health Centres, will go a long way in achieving the Maternal and Child Health needs envisaged in the millennium development goals.

My earnest wishes for the success of the programme

Sincerely,
Dr. Dinesh Arora I.A.S
State Mission Director
Arogyakeralam

Messages

One of the major objectives of the National Rural Health Mission (NRHM) is to reduce Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR) in the country. This has been given significant importance while introducing policy decisions on all health related matters across the state. As part of enhancing the knowledge of Medical officers and paramedical staff that will help them to check the mortality rate under control, NRHM has planned various training programmes. Association of NRHM with Kerala Federation of Obstetrics and Gynecology (KFOG) for the training is a new venture. It is quite commendable to note that KFOG is putting their best effort to train our doctors and nurses from selected institutions and training effectiveness so far is highly appreciated by all the trainees. KFOG is also carrying out pre and post training need and facility assessment in the proposed institutions from where participants are detailed. I wish to congratulate the training team for putting their best training practices to empower the health staff with latest knowledge and skills. I am sure that this will definitely go a long way in the Health services in Kerala to achieve NRHM objectives.

Dr. P.K.Jameela, MD.DCH
Addl. Director of Health Services(FW) &
State Programme Manager, NRHM
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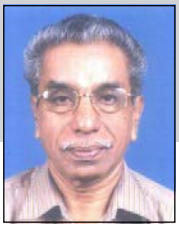

Messages

The speciality of OBSTETRICS came from the word “Obstetros” meaning “To stand by” (the laboring woman). During the long decades the watch word guiding the profession has changed from the dictum of “Masterly inactivity” to a policy of “Active management”. For this to bear fruit, there should be “sense” in patient waiting and “science in timely intervention.

This module meant to provide the basic skills in Labour Management at CHC level, often sub-optimally manned and equipped, is a blend of practical vision and scientific tutoring. It is my fervent hope that our aspiring colleagues, due to play a pivotal role in transforming the dreams (about the CHC upgradation programme) to reality will find this publication very useful, interesting and catalystic.

My best wishes for this endeavour.

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Messages

To sustain the impressive gains made on the health front, Kerala should aim at two fundamental areas in healthcare service delivery , viz quality and accountability. This is especially true to the speciality of maternal and child health. In spite of the fact that nearly all women deliver in a facility, we are still having maternal mortality ratios of double digits which should be unacceptable by any standards. Any further improvements in this area can be brought in only by synergistic actions of administration as well as the professionals. The current training designed to empower the staff of the CHCs is part of such a combined effort. I am sure that the training will go a long way in empowering the staff so that the ultimate objective of good quality primary care delivered through the peripheral centres will become a reality in Kerala.

Dr.V.Rajasekharan Nair
Chairman,
Academic Committee
KFOG.

Foreword

The CHC obstetric upgradation project 2010 is the first joint venture of the Kerala Federation of Obstetrics and Gynaecology (KFOG) with the National Rural Health Mission(NRHM) and the Kerala Government Health Services. KFOG volunteered to undertake this project because of the lessons learned from the confidential review of maternal deaths (CRMD). The maternal death audit had shown that there is an urgent need to strengthen the obstetric services in the periphery. The cases which ended up as maternal deaths in the tertiary care centres often had the initial treatment at the periphery. We realized that unless proper and timely help is received at the peripheral centre, the final outcome is bound to be unfavourable.

This module is to meet the needs of the doctors and nurses in the community health centres. It is very abridged. But we have taken care to see that the recommendations are practical and scientifically correct. Please refer standard text books for more detailed coverage of the subject. We hope that the obstetricians and labour room nurses in the peripheral centres will find this module useful in their day to day practice and a stimulus to read further on these topics.

The contributors to this edition are seasoned obstetricians who have devoted their time for this noble cause. They have participated in the first three training sessions conducted by us. We are very grateful to them for their help.

We are indebted to NRHM, especially Dr.Dinesh Arora and the Kerala Government Health Services represented by Dr. P K Jameela Additional Director for entrusting the training to KFOG. We hope that this will lead to more joint ventures in the future that will benefit the society at large.

Dr.V Rajasekharan Nair was the architect of the whole project and has agreed to be the liaison officer. The Presidents of KFOG, Dr. N S Sreedevi (2009) and Dr. T Narayanan (2010), the secretary Dr. Jayandhi Raghavan, Treasurer Dr. Rajalakshmi Janardhanan and Joint Secretary Dr. Sangeetha Menon helped us in this venture right from the beginning. It is the

Maternal Fetal Medicine Committee of KFOG that coordinates the whole project. The number of people who work behind the scene and help us are too many to mention by name. But the executive committee comprising of Dr. K Ambujam (Vice Chair), Dr. Deepthy M. (Secretary), Dr. Lola Ramachandran (Treasurer) and Dr. Betsy Thomas (Jt. Secretory) shoulders the main burden. Our anesthesiology and neonatology colleagues led by Dr. A K Unnikrishnan and Dr. K Raveendravarma and the departments of Obstetrics and Gynecology of the medical colleges and major institutions in different parts of the state have helped us in conducting the courses and preparing this handbook. Members of all the O & G societies in the state have volunteered their help. We are greateful to all of them and hope that you will find this handbook useful.

Dr. V P Paily,
State Co ordinator,
CHC Obstetric Upgradation Project, Kerala, 2010 and
Chairman, Maternal Fetal Medicine Committee of KFOG.

CONTENTS

Antenatal care in CHCs

Introduction

It is important to have a systematic way of doing antenatal care.

A day in a week should be separately assigned for A/N care. It should be publicized with posters and notices.

Once a month(eg: 1st week) on the antenatal care day, mother/mother in law/husband also may be asked to attend, so that it can be antenatal class day. Videos and talks can be arranged.

Record keeping is important. A/N card is the simplest way. Hospital should have register of all A/N cases. Highlight risk factors in red ink in the card as well as the register.

Frequency of visits

First visit should be as early as possible after confirmation of pregnancy. Subsequent visits atleast one in 1st and 2nd trimester and two in 3rd trimester. Additional visits should be arranged depending on the condition.

Investigations

- At booking visit, haemoglobin, blood group, blood sugar(R), and VDRL should be done.
- HIV is to be done after discussion and counseling.
- Blood sugar (Modified GTT with 75 gm glucose) to be done in the third trimester.

Minimum investigations recommended

Investigation	To be done at:
1. Hb	Once every trimester
2. Urine routine	Every visit — at least for albumin
3. Blood group,Rh, VDRL, HbsAg, HIV	Preferably at booking visit
4. 75 gm GTT	@24-28 wks
5. USG	@20 wks to screen for anomalies- repeat as necessary

Examination:

Height - 1st visit
Weight — every visit
BP every visit
General examination including CVS — 1st visit
Pelvic examination (first visit - optional)
Obstetric palpation from 2nd trimester. Height of fundus marked in serial measurements will help to predict growth restriction.(Symphysio fundal height SFH)

Risk factors to be looked for as pregnancy progresses

Anaemia
High Blood pressure
IUGR
Multiple pregnancy
Abnormal presentation
Diabetes
Placenta previa
Previous caesarean - Plan for delivery at higher centre

Medication

- All prescriptions should be made after considering its potential effects on mother and baby.
- Folic acid should be continued throughout pregnancy.
- Calcium from 20 weeks onwards
- Oral iron from 2nd trimester
- Tetanus toxoid — 1st dose at booking visit followed by next dose 6 weeks later. For those immunized earlier, booster dose at 36 wks.

Diet:

Nutritious diet with plenty of vegetables should be advised.

Exercise:

Except when there is bleeding and other medical disorders, usual activities should be allowed.

Warning signs in pregnancy which need immediate attention

1. headache
2. blurring of vision
3. epigastric pain
4. oliguria
5. New onset nausea and vomiting in the third trimester

} could mean imminent eclampsia

6. Leaking of fluid PV
7. Bleeding PV
8 Loss or decreased fetal movements
9. Edema all over the body especially over the hands and face

Procedures & Registers at CHCs

The objective of National Rural Health Mission (NRHM) is to provide accessible, affordable, accountable, effective and reliable health care, especially to the poor and the vulnerable sections of the population in rural areas.

The health care and associated procedures that can be offered to women seeking help at the CHC include:

A. Obstetrics

1. Antenatal Care
2. Normal Labor — With / Without Episiotomy
3. Operative vaginal delivery - Vacuum extraction
4. PPS/Minilap
5. Dilatation & Evacuation
6. MTP - Medical Abortion and Manual Vacuum Aspiration
7. Forceps delivery ,Caesarean section — if specialists are available

B. Gynecology

1. Pap smear
2. Biopsy Cervix
3. D & C

Cases that have to be referred include:

1. Pregnancy of unknown location, Suspected ectopic pregnancy
2. Medical disorders — Heart disease, Pre eclampsia, GDM, epilepsy, other severe chronic illnesses, Rh Negative pregnancy
3. Malpresentations near term - breech, transverse lie, Multiple pregnancy
4. Big baby, IUGR, oligohydramnios
5. Short primi, suspected CPD
6. Need for induction
7. Primi not delivering within reasonable time, prolonged labour
8. Preterm labour, PPROM
9. PPH
10. Severe perineal injuries

If the possibility of collapse during transfer exists, two IV lines (no. 16 or 18 G canula) with RL or NS on flow, catheterization (in PPH) and accompaniment of staff is essential.

Registers to be maintained at CHCs include

1. OP
2. IP
3. ANC
4. Immunization
5. Iron, Folic acid
6. OC Pills
7. IUCD
8. Abortion register
9. MTP
10. Pap smear and Down staging of Ca Cervix
11. PPS / Minilap
12. Minor OT register
13. Major OT register
14. Parturition Register

Parturition register (See the sample page of Annexure)

The Parturition Register must be maintained with utmost care as it is a document that has to be retained for a long time. The entries should be made in block letters. The columns to be entered include the following:

1. Monthly number
2. Yearly number
3. IP number
4. Booked / unbooked
5. Name , age, Blood Group and Rh
6. Husband's name, address
7. Obstetric score
8. Date and time of admission
9. Date and time of delivery
10. Normal or abnormal
11. Presentation
12. Gestational age at delivery
13. Baby sex
14. Baby weight
15. Placental weight, cord length
16. Perinatal mortality — IUD(FSB, MSB), NND
17. Neonatal events — Apgar score
18. Conducted by
19. Height, weight, APL/BPL, educational status of husband and wife
20. Remarks — mode of delivery, important details

Setting up Labour room

The first stage room

It should ideally have an admitting area with toilet facilities, a cot and a screen. The woman is allowed to have a wash and change clothes (preferably white clothes). Shaving and enema can be given here.

This room must have

1. Steel cots or labor cots with mattress and mackintosh which can be cleaned easily.
2. Chair for relative
3. Bedside commode or bed pan
4. IV stands and screen
5. Buckets for disposal of used gloves, cotton swabs
6. Trolley with autoclaved P/V sets (pouch with a pair of gloves, cotton balls, pad, artery forceps), povidon Iodine lubricants, sterile Kocher's forceps
7. Drug rack, BP apparatus, fetoscope
8. Oxygen cylinder and suction apparatus
9. Table and chairs for staff
10. Scrub area between first and second stage rooms, with elbow taps and running water facility

The Second Stage Room

The Second Stage Room should be maintained as an Operation Theatre. The essentials include:

- Labour cot with cut out , steel buckets, mackintosh, IV stand
- Suction apparatus, Oxygen cylinder
- Spotlights
- Wall clock
- Pre autoclaved delivery sets and trolley
- Round stool with adjustable height
- Baby Suction apparatus and receiving tray
- Autoclaved forceps, vacuum cup and tubing
- Suction apparatus for applying vacuum cup
- Cervical inspection set
- Drugs and bins rack

- Essential drugs
- Emergency set (laryngoscope, airway, ambubag, emergency drugs)

Essentials in Labour Room

- IV fluids — normal saline, ringer lactate, DNS, HES
- IV Cannula- No 16 , 18, 20
- No. 16 Foley catheter, urobag, distilled water, Nelaton's catheter
- Suction catheters — adult, neonate
- Autoclaved mops, roller gauze packs
- Suture materials

Essential Drugs in Labour Room

- Pitocin (has to be kept in refrigerator)
- Methergine (has to be kept in refrigerator)
- Prostodin (has to be kept in refrigerator)
- Terbutaline
- Magnesium sulphate
- Adrenaline
- Betamethasone
- Dexamethasone
- Hydrocortisone, Avil
- Lasix
- Ranitidine, Metaclopromide
- Fortwin, Phenergan,
- Labetalol
- Ampicillin, metronidazole
- 1% Lignocaine
- PGE1 tablets
- Nifedepine tablets

Resuscitation corner

The resuscitation corner can be in the second stage room itself. It must have the following:

- Warmer , with oxygen and suction apparatus
- Intubation set
- Essential drugs (Naloxone, Adrenaline), bins with sterile gloves, dry towels
- Weighing machine

Conduct of Labour

Management of normal labour

Welcome the patient to labour room in a friendly manner with a smile.
Note down any special aspects eg: previous CS
The dress should be comfortable and suitable to allow obstetric examination

Preliminaries:-

Ask the patient to wash her feet and wear a clean dress before entering the labour room
Enquire about onset of labour pains and leaking p/v
Collect records of A/N visits and investigation reports
Complete general and obstetric examination after emptying the bladder
Cleaning of vulva with antiseptic solution
Enema and shaving of perineum are optional

Vaginal Examination:-

Done under aseptic precaution

Indication for per vaginal examination

1. On admission in labour
2. To note the progress of labour 4th hrly
3. To rule out cord prolapse following rupture of membranes

Points to be noted during vaginal Examination

1. Effacement and dilatation of cervix, whether cervix is thin or thick. Is it well applied to the presenting part.
2. Status of membranes
3. Station and position of presenting part
4. Assessment of pelvis to rule out CPD

Modified Bishop score (Burnett's score)

Factors	0	1	2
1. Dilatation of cervix	<1.5cm	1.5-3cm	>3cm
2. Effacement of cervix	2cm	1cm	<0.5cm
3. Consistency of cervix	Firm	Soft	Soft and stretchable
4. Position of cervix	Posterior	Mid	Anterior
5. Station of head	-2 and above	-1	0 and below

Very unfavourable = < 4
Unfavourable = 4 - 6
Favourable = 7 or more

Enter the p/v findings using a seal to avoid missing certain points

The seal includes

Date	Time	initial of examiner
Cx dilatation	length	softness
Membranes	liquor	Cx position
Presentation	station	position
Caput	moulding	pelvis

Conduct of 1st stage of labour

Aim is non interference, but at the same time monitor the progress of labour

1. Fetal heart rate is monitored every ½ hr at least for 1mt during and immediately after contraction
2. Monitor the uterine contraction - duration and frequency
3. Color of liquor is noted when membranes rupture
4. Monitor maternal pulse, BP and temperature 4th hrly
5. Encourage the patient to walk about unless there is contraindication or sedated
6. Allow liquid or semisolid diet (kanji) in early labour. Intra venous fluids as 2nd stage approaches at the rate of 100ml / hr. Avoid solid food and milk
7. Adequate pain relief with Inj.Tramadol / Inj.Fortwin + Inj.Phenergan, Inj.Pethidine etc depending upon the availability. Not when delivery is anticipated within 2-4 hrs
8. Encourage her to empty the bladder frequently
9. Once the patient is in active phase (cervix 4cm dilation) all entries should be done in partogram

10. ARM when cervix is more than 3cm dilated and fully effaced
11. 4th hrly p/v to note the progress of labour
12. Oxytocin 5units in 500ml normal saline to augment labour if contractions are weak. Drip rate is adjusted according to the need.

Conduct of 2nd stage of labour

1. Vaginal examination is done to confirm the dilatation and note the position and station of the head .Also look for caput and moulding
2. Encourage bearing down only when cervix is fully dilated and head is visible at the outlet .Patient should be taught to relax in between contraction
3. FHS is checked every 5mts
4. Ironing out perineum with xylocaine jelly or oil will help to avoid episiotomy or reduce its size.

Evidence of fetal distress

Meconium stained liquor with cephalic presentation and deceleration in FHR

Preparation for delivery

Shift the patient to delivery table
Dorsal position or lithotomy position
Accoucheur scrubs up and wears mask and apron
Cleaning external genitalia with povidon iodine
Catheterise the bladder if necessary

Delivery of Head

1. When crowning occurs episiotomy (RMLE) is given after Inj.Xylocaine infiltration locally. We advocate selective use of episiotomy rather than routine episiotomy
2. Maintain flexion of head
3. Sudden escape of head is prevented and head is delivered in between contractions. The left hand exerts pressure on the occiput and right hand supports the perineum
4. Suction of mouth and pharynx should be done and eyelids are wiped. Look for any loop of cord around the neck and slip it off. If too tight, the cord should be cut between 2 clamps
5. Avoid unnecessary hurry once head is delivered. Allow time for restitution and external rotation before giving traction to deliver the shoulders.

6. The head is grasped and gently drawn downwards until the anterior shoulder is delivered. By drawing the head upwards, the posterior shoulder is also delivered out.
7. If the baby has cried, there is no hurry to cut the cord - wait till the cord pulsation ceases. This will give the baby 80ml more of blood and 50mg of iron. Early cord clamping has been given up now.
8. Oxytocin drip if present, should be increased to 15-20units in 500ml normal saline
9. If mother is Rh-ve or O +ve, take cord blood for grouping and direct Coomb's test
10. Encourage early breast feeding

Conduct of 3rd stage

- 3rd stage of labour begins after delivery of baby and ends with expulsion of placenta, contraction and retraction of uterus and control of bleeding. It usually lasts for 15 mts.
- While waiting for placental delivery, inspect the upper vagina and cervix for tears
- Wait for spontaneous separation of placenta.

Signs of placental separation are

1 A hard globular supra pubic bulge
2 Fresh bout of bleeding p/v
3 Extravulval lengthening of cord

Delivery of placenta

1 Placenta is delivered by controlled cord traction with counter pressure on the body of uterus. Once the body of placenta is outside the vulva, support it with both hands to prevent tearing of membranes. Rotate it, so that membranes come out entire.
2 Massage the uterus after placental delivery
3 Placenta should be inspected for its completeness
4 If cord snaps, do manual removal

Active management of 3rd stage of labour

Comprises of steps taken to reduce the duration of 3rd stage and thereby blood loss. It includes

1. Prophylactic oxytocics
2. Controlled cord traction
3. Uterine massage after delivery of placenta.

Oxytocics in 3rd stage

Given at the time of delivery of anterior shoulder

IV Oxytocin infusion 20 units in 500ml normal saline

Or

IM/IV Oxytocin 10 units

Or

IM Inj.syntometrine (5units Oxytocin + 0.5 mg ergometrine)

Or

IM 0.2 mg Erogometrine

Or

IM 125 microg PGF2 alpha (prostodin)

Misoprostol 600 microgram may be inserted rectally to get sustained contraction

Storage of oxytocics:

- Oxytocin, ergometrine, PGF2 alpha and Syntometrine should be kept in refrigerator to maintain its potency.
- Misoprostol tablets can be kept outside at room temperature.

4Th stage of labour

1 hr after delivery

During this stage check

- maternal pulse and BP
- Check it the fundus of uterus is palpable and well contracted
- Bleeding p/v is within normal limits

Anti D :

If mother is Rh negative, consider the need for anti D. Take cord blood for grouping and Coomb's test.

Manual removal of placenta (MRP)

Normally placenta separates and delivers within 30mts of delivery

Indication

- Placenta fails to separate and be expelled within 30mts of delivery
- PPH with placenta retained inside

Procedure

- Ideally done under GA in OT
- Continue Oxytocin drip to make the uterus contract
- Gently massage the uterus and see whether the uterus is contracting under your hand. Never try MRP with a relaxed uterus. Ideally it should be done in the theatre. Rarely if the patient is multiparous with open os and co-operative, can try MRP in LR under IV sedation. Assistant should monitor pulse and BP (to rule out neurogenic shock). A difficult manual removal should not be attended without anesthesia. One can try intraumbilical Oxytocin 10-20 units diluted in 30ml NS injected through umbilical vein using No-10 infant feeding tube. This results in complete filling of placental bed capillaries and separates the placenta from uterine wall.

- Empty the bladder with a disposable catheter
- Done under aseptic precautions after cleaning and draping
- Right hand is introduced in a cone shaped manner along with the cord. Left hand is used to steady the fundus of uterus and to push the uterus downwards.
- Placenta is separated by slicing movements of ulnar border of right hand. Once the placenta is completely separated, remove by CCT (Controlled Cord Traction).
- Ask the assistant to give Inj.Ergometrine / Inj.Prostodine to make uterus contract.
- Do bimanual uterine massage.
- Check for the completeness of the placenta.

Problems while doing MRP

1. Hour Glass constriction ring — Will prevent introduction of hand through cervical os.
2. Morbidly adherent placenta — Here there is difficulty to get the cleavage plane.

Complications

1. PPH due to incomplete removal
2. Neurogenic shock if done without GA
3. Rupture or perforation of uterus.
4. Inversion of uterus.
5. Subinvolution
6. Infection.
7. Rarely air embolism.

Episiotomy & Perineal Tears

- Given at the time of crowning of head, when the perineum is thinned out.
- RMLE is the commonest type of episiotomy.
- Even after giving episiotomy, don't forget to give good perineal support during the delivery of head and shoulders.
- Look for any extension to anal sphincter, rectal wall, cervical and vaginal lacerations.
- Any irregular extension of episiotomy should be tackled first.
- Use only TAILED Tampons to prevent blood coming out from cervix while suturing episiotomy.
- Give local infiltration at the site of episiotomy with Xylocaine, wait for 2 minutes, then only start episiotomy repair even though it was given earlier.
- Repair can be done with No.1. Catgut or delayed absorbable sutures like 1- 0 Poly Glycolic Acid (Vicryl) or Poly Glactin depending upon the availability.
- Start mucosal suturing 1 cm above the apex.
- Episiotomy may be sutured with continuous stitch. This helps to reduce the amount of suture material. We can also use continuous suturing for vaginal mucosa and interrupted sutures for muscles. Skin is better closed with subcuticular stitch either interrupted or continuous to reduce the post-episiotomy pain.

Perineal Tears

Best time to examine for vaginal, cervical and perineal lacerations is immediately after the baby's delivery and before placental delivery.

Classification

1^0 – Perineal Tear — involves only vaginal mucosa and connective tissue.

2^0 —Vaginal Mucosa, connective tissue and muscles

3^0 — Complete Trans Section of anal sphincter,

3 a: lessthan 50% of ext. sphincter tear
3 b: 50% or more of ext. sphincter tear
3 c: Internal sphincter tear

4^0 – Rectal Mucosa involved

If any perineal tear is long and deep make sure it is not a 3rd degree or 4^{th} degree tear.

The repair is done with

a. Poly Glycolic Acid sutures — The advantages are Non allergic, better tensile strength and less chance of infection.
b. Chromic Catgut — can be used but not ideal.

3rd Degree and 4^{th} Degree Tears

- Repair is done ideally under regional or general anesthesia. If not possible consider repair under local anaesthesia.
- Place a gloved finger in anus and lift the anal mucosa. Check if the tear extends to rectum. Repair rectal mucosal tear with 3-0 Vicryl with knot in the lumen of rectum.
- Ends of anal sphincter is grasped with Allis forceps and approximated with interrupted 2-0 Vicryl / PDS.
- If the tear extends to the anal sphincter and rectal mucosa, better to refer the patient to higher centre if experienced person is not available.

Post repair care

1. Give antibiotics for 5-7 days
2. Stool softeners for next one week

Postpartum haemorrhage Prevention & management

PPH continues to be a major cause of maternal death in Kerala. Risk assessment in the antenatal period cannot always predict those women who will have PPH. Most often cause is atonicity of uterus. Active management of 3rd stage should be practiced in all women in labour as it reduces incidence of PPH due to atony.

By definition PPH is blood loss exceeding 500ml after vaginal delivery. As it is difficult to measure blood loss a practical definition is a drop in haematocrit of 10%. In anaemia and preeclampsia hypovolaemia may set in early.

Primary PPH is PPH within 24 hours of childbirth whereas **secondary PPH** occurs after 24 hours and upto six weeks postpartum

Causes
1. Atonic
2. Traumatic
3. Coagulation failure
4. Retained placenta
5. Inversion

REMEMBER THE 4 T -TONE,TRAUMA,TISSUE,THROMBIN

Causes of Atonic PPH

- Overdistended uterus, Big baby, polyhydramnios, multiple pregnancy
- Grandmultiparity
- Prolonged labour
- Precipitate labour
- Antepartum haemorrhage
- Induction/ augmentation of labour
- Fibroid complicating pregnancy
- Anemia
- Previous history of PPH

Causes of Traumatic PPH

- Perineal lacerations
- Instrumental delivery
- Face to pubis delivery
- Obstructed Labour

Please note: every pregnancy is at risk of PPH

Prevention

- Antenatal risk assessment
- Correct anaemia
- Active management of third stage of labour (AMTSL)
  - Immediate administration of uterotonic drug
  - Controlled cord traction
  - Uterine massage to ensure sustained contraction

General Management

- Immediately call for help. Mobilise the available personnel
- Start IV line with a wide bore cannula (no 16 grey /no 18, green)draw blood for clotting time, Hb, PCV and cross matching and give Normal saline or Ringer lactate fast, three times the estimated quantity of blood lost. Alert the nearest blood bank and arrange blood.
- Identify the cause of bleeding. If uterus is relaxed cause is atonicity.
- Excess bleeding in the presence of contracted uterus is due to traumatic cause.

Atonic PPH

- Massage the uterus continuously
- Add 20 units oxytocin to one drip. Give I V Methergine 0.2 mg and repeat IM Methergine 0.2 mg after 15 minutes.(If no history of severe hypertension or cardiac disease)
- Place a Foley's catheter and record urine output.
- Give Prostaglandin F2 alpha IM if no H/O bronchial asthma
- Keep Misoprostol 600 microgram rectally
- Start blood transfusion
- Check coagulation parameters
- Examine the placenta for completeness

Mechanical methods to arrest bleeding

1. Condom tamponade
2. Intrauterine tight packing with a Mop. (Not a Gauze)

If bleeding continues refer the patient to a tertiary care centre as further management needs surgery.Send adequate donors

Uterotonics				
Drugs	**Dose & Route**	**Repeat dose**	**Max Dose**	**Precautions**
Oxytocin	10 units `im/iv	iv 20 u in 500mlNS/RL -@40dpm	Not >3L	To be kept in fridge
Methergine	0.2mg im	After 15mts	5 doses 1mg	PIH, HTN, Heart disease To be kept in fridge
15 methyl PGF2a	250 microgm im	After 15 mts	8 doses (2mg)	Asthma, heart disease Refrigerated
Misoprostol	600—800 microgm P/R			Shivering with high dose

Picking up PPH early:

- Be trained and ready to tackle it anytime !
- Be vigilant especially in high risk cases
- Always look for trauma in the situation of atonic PPH and vice versa
- Never be complacent and underestimate blood loss
- Remember the golden hour principle — act fast and do not procrastinate!
- All women must be carefully watched after delivery at least for an hour or two — the fundus must be palpated and gently pushed down — to express any clots / blood from the inside of the uterus.
- Keep a strict watch on her vitals

- Refer if required — but early and only after initial resuscitation and taking steps to prevent bleeding on the way.

Traumatic PPH

- Bleeding in the presence of contracted uterus
- Examine for tears on the cervix, vagina, paraurethral region with good light, good assistants,good retraction
- Suture lacerations
- Vagina packed
- High tears may have to be tackled under anesthesia and hence refer with a tight pack of the vagina

Retained Placental fragments

Feel inside the uterus for retained bits of placenta and membranes. Remove bits using sponge holding forceps and curette.

How to refer?

1. Talk to the bystanders as soon as bleeding is detected regarding the need for referral.
2. Do the first aid measures
3. Telephone the referral centre
4. Write a proper reference letter with brief clinical details, investigation results, blood group etc
5. Mobilise donors
6. Help to arrange a conveyance
7. Arrange someone to accompany to make sure fluid is running and so also oxygen.

Instrumental Delivery

Vacuum and Forceps are the two useful instruments for completing delivery in selected situations. Careful selection of case will help to prevent complications. They are indicated to cut short the second stage for maternal or fetal causes.

VACUUM

Uses negative pressure. Can use metal cup or silastic cup
Vacuum completes rotation. So may be used even if rotation is not complete.

Prerequisites

- Fully dilated cervix
- Presenting part at + station
- Membranes ruptured
- Term fetus presenting by vertex

Safe practices

- Episiotomy may be needed for placement of cup. If not necessary for placement, delay the episiotomy until head stretches the perineum. Some time episiotomy may be avoided.
- Entrapment of maternal tissue between fetal head and vacuum should be checked
- Apply with centre 1cm anterior to posterior fontanelle
- Negative pressure should not exceed 0.8 kg/cm2
- Traction should be synchronous with uterine contraction and at right angles to fetal scalp
- No traction between uterine contractions
- Maximum 3 pulls or 30 minutes
- Inspite of sufficient traction if no progress of labour, evaluate again and abandon if necessary
- After any instrumental delivery, look for maternal injuries, tears in cervix and vagina

Complications

Fetal
Cephalhaematoma
Scalp abrasions
Intracranial bleeding

Maternal
Perineal lacerations

FORCEPS

Only outlet and low forceps should be attempted

Prerequisites

1. Head should not be palpable per abdomen
2. Cervix fully dilated
3. Membranes ruptured
4. Vertex presentation at least @ +2 station
5. Rotation should be complete
6. Bowel and bladder empty

Application

- Pudendal block anesthesia
- Direct method of application catching head in biparietal diameter
- Apply left blade first followed by right blade under guidance of fingers in vagina
- If application is correct locking of blades will be easy or depressing the handles gently may help. Traction downwards first, then downwards and forwards to extend the head
- If difficulty in delivery, reassess
- Check the vagina, cervix and uterus for injuries

Digital rotation

If rotation is incomplete, apply pressure at the edge of the posterior border of the parietal bone in the direction desired. With index and middle finger of the other hand apply pressure on the frontal bones to push the sinciput to the opposite direction

After rotation apply forceps and deliver the head

The Shoulder Dystocia Drill

The entity of a difficult delivery of the shoulders once the head has been born is a frightening experience in the labour room. All personnel must be alert and well trained to execute the shoulder dystocia drill in the face of an emergency.

Recognition of shoulder dystocia is often by recoil of the head back against the perineum-caused by the impaction of the anterior shoulder behind the symphysis pubis — **Turtle sign**.

A vaginal exam at this stage, will rule out other possibilities such as:

1. Abdominal or thoracic enlargement of the baby as in an anomaly.
2. Locked or conjoined twins
3. Uterine constriction ring

At this juncture, it would do well to remember the drill using the pneumonic **– HELPERR**.

H call for **HELP.**
E evaluate for **EPISIOTOMY**
L **LEGS** as in Mc Roberts maneuver.
P supra pubic **PRESSURE.**
E **ENTER** maneuvers.
R **REMOVE** posterior arm
R **ROLL** over

Unilateral shoulder dystocia is usually dealt with easily by standard techniques.

Help is called for, the **episiotomy** is enlarged, or given if not already done.

The Mc Roberts maneuver involves sharply flexing and abducting the mother's thighs on her abdomen. This will result in a cephalic rotation of the symphysis and will release the anterior shoulder. It also serves to bring the pelvic inlet and outlet into a more vertical alignment hence accomplishing an often automatic release of the shoulder.

Moderate **supra pubic pressure** is often the only additional maneuver required to disimpact the anterior shoulder. This is best done with the heel / palm of the hand in an inferior and lateral direction, very similar to the cardiac resuscitation technique.

If the less invasive maneuvers fail, the **enter maneuvers** are done — **Woods cork screw maneuver** is done by placing the hand behind the posterior shoulder and rotating it 180 degrees towards the anterior shoulder. This must be done using pressure on the shoulder and never on the head!

The choice of whether to use a Woods first or a direct **delivery of the posterior arm**, is individualistic. To deliver the posterior arm, the hand is inserted into the posterior vagina, and the arm is ventrally rotated at the shoulder with delivery of the arm over the perineum. The fetal arm is swept forward along the chest, keeping the arm flexed at the elbow , the hand is grasped and the arm extracted along the side of the face.

The woman can also be made to **roll over on all fours** — the **Gaskin maneuver** which will often free the anterior shoulder. Further maneuvers like the Zavanelli, abdominal rescue and deliberate fracture of the clavicle are rarely used and are associated with more morbidity.

Whatever the method used, there are **maternal and fetal complications** like trauma to the genital tract, lacerations and haemorrhage, brachial plexus injury, Erb's palsy, asphyxia and mental retardation and fractures of the clavicle and humerus.

In a well oxygenated fetus, there is period of 4-6 mts, from the delivery of the head to effect delivery of the shoulders.

All the events must be **documented with the time in a chronological fashion**, in order to avoid troublesome litigation later!

Definite don'ts in shoulder dystocia:

1. Never use excessive traction from below — this only leads to a brachial plexus injury.
2. Rotational maneuvers are done around the shoulder not the head!
3. Do not give fundal pressure, it only serves to impact the shoulders further!

Hypertensive Disorders

Hypertensive disorders contribute to significant maternal and perinatal morbidity and mortality. In Kerala this is the second most common cause of maternal death first being haemorrhage. Early detection and timely management will help to reduce complications.

How to measure BP ?

BP should be measured in the sitting position with the right hand supported in the horizontal position at the level of the heart.

A simple classification of hypertension in pregnancy

1. *Gestational hypertension* - Hypertension after 20 weeks of gestation , during labour or the puerperium
2. *Chronic hypertension* - Hypertension present before 20 weeks or before pregnancy
3. *Preeclampsia* - Hypertension with proteinuria
4. *Eclampsia* - Hypertension / Preeclampsia with seizures

Diagnosis

- Systolic BP of 140 mmHg or more Diastolic BP 90 mm of Hg or more on two occasions 6 hours apart

Criteria for severe Preeclampsia

- BP 160/110 or more
- Proteinuria > 5 gm/24 hours
- Urine output <400ml in 24 hours
- Epigastric pain, headache, nausea, vomiting , visual disturbances
- Pulmonary oedema, cyanosis
- Impaired liver function
- Thrombocytopenia
- IUGR

Management

1. Rule out preexisting medical disorders

2. Investigations

Urine for proteins, deposits and casts
24 hour urine output and urinary proteins
Haemoglobin, BT ,CT
Blood urea, creatinine, uric acid
Platelet count
Liver enzymes
USG to detect IUGR
Doppler study
Optic fundus examination

3. If all investigations are within normal limits and BP is not more than 140/90 mm Hg patient may be managed as outpatient but

Weekly check up is mandatory.
Advice to take rest in lateral position
Normal diet
No sedatives or diuretics
Fetal movement count for one hour three times a day
Counsel regarding danger signals

4. Antihypertensives

Tab. Alphamethyl dopa 250-500 mg three times a day
Tab. Nicardia 10 mg three times a day
Tab. Labetalol 100mg twice daily

In mild cases start with a single drug. Antihypertensives only help to bring down BP so as to continue pregnancy till fetus is reasonably mature to survive extrauterine. Definitive management is delivery.

The clinical course of severe preclampsia is characterized by progressive deterioration of both mother and fetus and needs immediate delivery. Hence the importance of close monitoring once preeclampsia is diagnosed. Once patient develops convulsions it becomes Eclampsia and the condition becomes grave and needs intensive treatment and delivery.

Eclampsia

- **First Aid Measures**

  Maintain Airway
  Oxygen inhalation
  Minimise risk of aspiration
  Lateral position
  Do not attempt to abolish convulsion but take care to avoid fall or injury to herself.
  As soon as convulsion is over start IV line

- Give loading dose of Magnesium sulphate 4 gm IV in 100 ml saline or ringer lactate over 15 mts and 4 gm IM
  Then 0+2 hours — Inj. Magnesium sulphate 4 gm IM/IV
  Then every 4 hours — Inj. Magnesium sulphate 4 gm IM/IV

after ensuring knee jerks(present), Respiratory rate (16/mt)and urine output (100ml/ 4hours).
The regimen is for 24 hours after convulsion or delivery whichever is later.

- Antihypertensives:

  If available injection Labetalol 20 mg IV loading dose may be given.

  If parenteral labetalol or hydralazine are not available and there is urgent need to bring down BP, sublingual nifedepine may be given by breaking a capsule and giving the drug drop by drop, not exceeding 5 mg.

  Oral nifedepine 10 mg should be started concurrently

- In impending eclampsia to prevent convulsions Magnesium sulphate 4 gm IM 4th hourly

How to Refer ?

Inform the referral centre over the phone. Write a detailed reference letter with time, clinical details drugs given etc. Always give magnesium sulphate before referral, but inform the higher centre that it is given.

Anemia in pregnancy

Anemia in pregnancy is the commonest medical complication of pregnancy encountered in India, often associated with both maternal and fetal morbidity and mortality. Anemia is directly or indirectly the cause of maternal mortality in 20-30% of cases.

According to WHO (1975), the pregnancy anemia is defined as Hb < 11 gm/dl.

Depending on the severity, classified as :

Moderate	Hb 7-10.4 gms.
Severe	Hb 4-6.9 gms.
Very severe	Hb < 4 gms.

Types of anaemia in pregnancy:

1. Iron deficiency anaemia. (Microcytic hypochromic) 60 %
2. Megaloblastic anaemia (Folic acid / B12 deficincy) 10 %
3. Dimorphic variety (Iron & Folic acid deficiency) 30 %

Anemia in pregnancy may be due to the following factors:

1. Lack of production of blood (hemopoietic)
    a. Iron deficiency
    b. Folic acid deficiency
    c. Protein deficiency
    d. Combined deficiency
2. Blood loss
    a. Bleeding during pregnancy
    b. Hookworm infestation
3. Hemolytic conditions
    a. Malaria
    b. Sickle cell disease
    c. Hemoglobinopathies
4. Decreased production
    a. Aplastic anemia
    b. Myelosuppresion

Iron and Folic acid deficiency are common in pregnancy.

Causes of Iron deficiency anemia:

1. Poor intake - Dietary deficiency, Hyperemesis
2. Poor absorption - Presence of phosphates and phytates
   - Achlorhydria
   - Ferric iron in the gut instead of ferrous iron
   - Lack of Vit C
3. Increased utilization
   - Demands of iron increased in pregnancy for Hb synthesis, tissue development and for the fetus. More in multiple pregnancy.
4. Loss due to - repeated pregnancy, menorrhagia prior to pregnancy, hookworm infestations and chronic malaria.

Diagnosis of anemia should be made based on the symptoms, signs and blood indices. Type of deficiency should be identified prior to starting therapy. Iron deficiency anemia is the commonest.

Investigations:

Hb, PCV, Total RBC and WBC count, Blood indices like MCV, MCH, MCHC and peripheral smear.
Total Iron binding capacity, serum iron, serum ferritin, serum folate, RBC folate etc can be done depending on the cause.
Stool examination for Hookworm infestation.

Prophylaxis of Iron and Folic acid deficiency.

- A good nutrition during the adolescent and reproductive period.
- During pregnancy, anemia prophylaxis is by supplementing 60 mg of elemental iron & 500 microgram of Folic acid for a minimum of 100 days.
- Deworming should be considered.
- Identification of anemia-

  Hb assay should be done at the first visit itself.
  Repeat at 24-28 wks, 32 wks and 36 wks.

Treatment of Iron deficiency anemia-

1. Oral Iron therapy
2. Parenteral Iron therapy
3. Blood transfusion

Oral Iron therapy-

In proved cases of iron deficiency anemia, Ferrous Sulphate 200 mg three times a day is given. This will provide 195 mg of elemental iron daily.
Dose may be adjusted depending on the tolerability and side effects.
Expected Hb rise is 2 gm/dl over a period of 3-4 wks.
Oral iron therapy is given to patients with anemia and remote from term so that sufficient time is available for the correction of anemia before labour.

Disadvantages of oral iron-

GI side effects
Unpredictable absorption
Poor patient compliance

Parenteral Iron therapy-

Indications-

Patient cannot tolerate oral iron
Poor compliance
Not sufficient time to correct the Iron deficiency orally

Methods of parenteral iron therapy

1. Iron Dextran (Imferon)- I/M and I/V
2. Iron sorbitol (Jectofer)-only I/M
3. Iron sucrose injection iv.

Of these,only iv administration of iron sucrose is recommended at present considering the lack of side effects.
The total Iron requirement is calculated using the formula-
(Normal Hb – Patients Hb) x Wt in Kg x 2.21 + 1000 mg = Milligrams of iron needed.
The dose is administered in divided doses.

Advantages of Parenteral iron-

Ensures the dose administration.

Iron Sucrose injection:

Intravenous administration of Iron Sucrose injections is reported to be safe in pregnancy. The total dose is calculated and the iron given in divided doses. Each 5 ml ampoules contain 100 mg of elemental iron and the drug can be given as a slow direct intravenous injection. Anaphylactic reactions are reported to be extremely rare.

Blood transfusion-

Indications-

Severe anemia Hb< 6 gm/dl
Anemia near term
Poor response to oral and parenteral iron.

Management of labour-

- Close monitoring is needed.
- Arrange blood
- Cut short 2nd stage of labour
- Prevent PPH by active management of 3rd stage of labour.

Puerperium -

Watchout for these complications

Increased risk of infection,
Congestive Cardiac Failure
Thrombo embolism.

Folic acid deficiency anemia-

Peripheral smear shows macrocytic-normochromic erythrocytes and hypersegmented polymorphs. Serum folate< 3 microgm/dl.

Prophylaxis

Administer 500 microgm of Folic acid daily

Treatment-

Folic acid 5 mg/day
Vit C 500 mg/day increases the action of Folic acid as well as iron.

B12 deficiency Anemia

250 microgram of cyanocobalamine is administered parenterally every week.

Diabetes and Pregnancy

Prevalence of diabetes in pregnancy is increasing and so the magnitude of the problem is large. Of these 90% cases are gestational Diabetes Mellitus (GDM). GDM is defined as carbohydrate intolerance of variable severity with onset or first recognition during pregnancy. Screening for GDM in pregnancy is important as it leads to fetal as well as maternal complications. Women already diabetic at the time of conception are prone for congenital malformations and hence preconceptional and early pregnancy care is very important.

Complications

Maternal

Preeclampsia	24% compared to 8% in women without diabetes
Polyhydramnios	suggests poor glycaemic control
Preterm labour	Overdistension
Infections	Urinary infections and vulvovaginal candidiasis
Ketoacidosis	associated with hyperemesis and infections
Genital tract trauma	due to macrosomia
Operative delivery	Incidence of caesarean section increased

In addition, in overt diabetes nephropathy and retinopathy may progress.

Fetal

- Increased incidence of congenital anomalies and abortion in overt diabetes
- Macrosomia and fetal injury
- Prematurity
- Unexplained still births
- Neonatal complications like hypoglycaemia, respiratory distress syndrome, polycythemia, hypocalcaemia and hyperbilirubinaemia

Common Congenital Anomalies

Cardiac defects	Transposition of great vessels, VSD
Neural tube defects	Anencephaly, spina bifida
Caudal regression syndrome or sacral agenesis	Rare but specific
GIT atresias	

Risk factors for GDM

- Age >30 years
- Previous GDM Family history of diabetes
- Previous macrosomic baby
- Bad obstetric history
- Polycystic ovarian syndrome
- Obesity
- Glycosuria

Screening

The advantage of screening for GDM is twofold. It reduces perinatal morbidity and mortality and picks up those women likely to develop type II diabetes in the future. Blood sugar estimation should be done in the first visit. If normal, screening test at 24 to 28 weeks is mandatory in all women as ours is an ethnic group with high risk of diabetes. For those with risk factors screening should start at 16 -18 wks. It should be noted that the traditional glucose challenge test with 50 gm glucose and the 3 hour GTT are being replaced by 75 gm 2 hour oral GTT recommended by WHO as it is simpler and only two samples are needed. The concepts about which test to use and what values should be taken as significant are uncertain at present. Reports from Dr.Seshiah's group in Chennai suggest a random test with 75gm glucose and taking a value above 140mg% at one hour later will be enough to pick up gestational diabetics. Until that gets international recognition, the value in the following table recommended by IADPSG (International Association of Diabetes in Pregnancy Study Group) may be followed. The reader is advised to follow developments in this field in the published literature as new guidelines are bound to come soon.

IADPSG recommendation of values to pick up GDM	
Time	**Normal**
Fasting	92mg
1 hr after 75mg glucose load in a fasting state	‘180mg%
2 hr after 75mg glucose load in a fasting state	153mg%

Even if the patient tests negative at 24-28 wks, if clinical indicators like polyhydramnios and macrosomia develop later, the GTT should be repeated.

Management

All the perinatal complications are directly related to level of glycaemic control. Hence tight glycaemic control is the cornerstone of management. In addition antepartum fetal surveillance is essential to decide upon timing of intervention. The aim should be to keep the fasting plasma values below 95 and the 2 hour postprandial below 120 mg/dl. Team approach with physician, diabetologist, obstetrician and neonatologist give the optimum outcome.

Medical management

Many of the gestational diabetics can be managed by diet alone. If control is inadequate with diet alone, insulin may be started.

1. Diet. The recommended calorie intake

30Kcal/kg of present body wt — Normal wt woman
24kcal/kg of present body wt — Over wt woman
35-40 kcal/kg of present body wt — Under wt woman

This is divided over three meals and three snacks.

Diet should consist of Carbohydrate 40%
Protein 40%
Fat 20%

The diet should be rich in fibre and protein and low in fat. Avoid simple and refined carbohydrate like sugar, honey, maida and jaggery. Complex carbohydrates like grain, cereal and pulses, beans, vegetables and salads should be included. Avoid bakery food and deep fried items. Animal proteins like fish, chicken, milk and yoghurt can be taken. Avoid red meat and egg yolk. Use oils that have a moderate amount of linoleic acid. Ideal fruits are orange, apple, guava and papaya. Split the usual breakfast into two equal halves and take it at 8 am and 10 am so that undue peak plasma level can be avoided.

2. Exercise Light exercise has been shown to reduce insulin requirements. A gentle aerobic exercise as walking for 20-30 minutes after meal may be encouraged.

3. Insulin is indicated when diet alone fails. Generally a mixture of short acting and intermediate acting insulins eg. Human Mixtard gives a smoother control of blood sugar. Dose is decided depending on body status and period of gestation

Formula to calculate dose of insulin

	1st trimester	2nd trimester	3rd trimester
Lean	0.4 units/k	0.5 units/k	0.6 units/k
Obese	0.6 units/k	0.7 units/k	0.8 units/k

The total insulin may be administered following 2/3, 1/3 rule i.e. 2/3rd in the morning and 1/3rd at night about 30 minutes before meals. In third trimester insulin requirements varies and so more careful monitoring is needed.

Antenatal Management

Hospitalization may be needed for glycaemic control. Regular ultrasound assessment of fetal growth and liquor volume in third trimester is necessary. A serial measurement of abdominal circumference is the best method of detecting macrosomia. Ante partum fetal surveillance should be started at 32 weeks. Twice weekly NST is recommended. In GDM patients controlled with diet alone, pregnancy can be continued till term. Other cases need termination at 38 weeks or earlier. Macrosomia can produce CPD and may necessitate caesarean section.

In overt diabetes at the first visit RFT, ECG, HbA1C and ophthalmoscopy is mandatory. An early dating scan is essential. Nuchal translucency is assessed at 11-14 weeks scan and a detailed anomaly scan is performed at 18-20 weeks. Fetal echocardiography is advisable around 20-24 weeks due to the high incidence of cardiovascular anomalies. Frequent blood sugar monitoring is required to adjust the dosage of insulin.

Intrapartum Management

Vaginal delivery may be allowed if there are no maternal or fetal complications, baby is average size, presentation vertex and no CPD.

Shoulder dystocia must be anticipated in second stage. If labour is to be induced, induction should start in the morning. Skip the morning dose of insulin. During labour the goal is to maintain plasma glucose between 90 and 100 mg/dl. Frequent blood sugar monitoring is done preferably hourly.

Plasma glucose (mg/dL)	Insulin/I V Fluid
<70	5%DNS100ml/hour
90-120	NS or RL 100ml/hour
120-140	NS/RL100ml/hour + 4 units regular insulin in drip
140-180	NS/RL 100 ml/hour + 6 units regular insulin in drip
>180	NS/RL100ml/hour + 8 units regular insulin in drip

Neonatal Care

A neonatologist should be present at delivery. Early breastfeeding is advocated to prevent hypoglycemia. Congenital malformations are to be specifically checked for.

Postpartum care and counseling

Immediately after delivery the insulin requirements fall considerably. In women with GDM 75 gm oral GTT is recommended at 6 weeks after delivery and repeated after 6 months. Even those with a normal GTT will have a tendency for GDM to recur in subsequent pregnancies and a 50% chance of developing frank diabetes within the next 10-20 years. They should be encouraged to continue the diet and exercise regimen adopted during pregnancy and guard against development of obesity. HbA1C should be <7% before planning pregnancy in overt diabetes. Folic acid supplementation should be started before pregnancy.

Contraception

- Low dose OC pill
- Injectable progestogens
- IUCD
- Barrier methods
- Permanent sterilization once family is completed

Medical Abortion

Non surgical method to terminate unwanted early pregnancies
Medication abortion became an option in India when in April 2002 the Drugs Controller General approved the use of Mifepristone to terminate early pregnancies.
In India medical termination approved up to 49days of gestation
WHO recommends up to 63days .

Recommended Drug Protocol

Day 1	200mg Mifepristone orally	Anti D if Rh —ve
Day 3	400mcg Misoprostal orally/ Vaginally	Analgesics
Day 15	Confirm completion of abortion (do us scan if in doubt)	Contraceptives

Effectiveness - 95-99% upto seven weeks

Advantages

- High success rates
- Resembles natural miscarriage
- Permits greater privacy
- Usually avoids surgical intervention
- Anaesthesia not required

Contraindications

- Ectopic pregnancy
- Anaemia <8gm%
- Long term steroid use
- Haemorrhagic disorder, use of anticoagulants
- Inherited porphyria
- IUCD in situ
- Chronic renal failure
- Allergy to Mifepristone, Misoprostol or prostaglandin

Precautions

- Cardiovascular disease
- Severe hypertension
- Uncontrolled seizure
- Severe renal liver or respiratory disease
- Glaucoma
- Pregnancy with fibroids

Warning signs

- Excessive bleeding
- Persistent fever
- No bleeding within 24hrs of taking Misoprostol

Key Steps of medication abortion

- Counselling
- Informed consent
- History and examination
- Drug protocol — 3 visits
- Contraceptive advice

Conclusion

Medication abortion is always the better option for terminating early pregnancy.

Manual Vacuum Aspiration (MVA) "A New Gold Standard in First Trimester abortion"

First trimester MTP techniques

- Medication Abortion (Upto 7 weeks)
- Suction evacuation using electrical suction.
- Manual vacuum aspiration using MVA syringe.
- Dilatation and evacuation.

The complications associated with dilatation and evacuation /curettage is higher than that of the suction evacuation. Hence D & E should not be used as a standard method for termination of first trimester pregnancy (FOGSI, FIGO,WHO)

Manual Vacuum Aspiration .

- Done using MVA plus aspirator & IPAS easy grip cannulae.
- Suction produced by MVA syringe is equivalent to that of electrical suction.
- Safety profile is better than EVA(Elective Vaccum Aspiration)
- Portable, no electricity is needed.
- Cost effective as the syringe can be reused several times.
- Useful in all settings (primary to tertiary)
- Can be used for MTP, incomplete abortion, missed abortion, Vesicular mole.
- Gynaecological uses include endometrial aspiration.

MVA Procedure:

- Ensure that legal requirements for MTP are met.
- Counsel the client.
- Cervical dilation achieved by paracervical block or misoprostol
- IPAS cannulas used as sound, dilator, suction & curettage.

- Use cannula one size bigger than period of gestation.
- Signs of completeness — gritty feel, foaming, no more products coming out.
- No further curettage.
- Examine products of conception.
- Decontaminate instruments, MVA Syringe, sterilise
- Advise on post procedural contraception.

Care of MVA Syringe:

MVA syringe and cannulae can be decontaminated, sterilized and may be reused several times. After use, the syringe is disassembled and immersed in 0.5% chlorine solution, for 10 mts, then washed thoroughly with running water, and sterilized. The syringe and cannulae should be separately wrapped and sent for autoclaving , or high level disinfection by boiling or chemical sterilization. The unit is assembled again by the surgeon just before the next MVA procedure.

Availability of the Syringe:

The MVA syringe and IPAS easygrip cannulae are not manufactured in India now. The imported units are supplied through M/S Romsons co.

Infection prevention in common practice

Sepsis still remains one of the common causes of mortality and morbidity. In spite of using higher and higher antibiotics sometimes there is no effective treatment against full fledged sepsis. Always simple steps in preventing the occurrence go a long way in preventing the complications.

The common sources can be the patient, the attending medical personnel, instruments, the various body fluids and secretions we deal with like blood, urine, stool, amniotic fluid etc,

Steps to prevent the infection

Labour Room

- LR should get the status of OPERATION THEATRE
- Keep first stage and second stage separately
- Tiled washable floor and walls.
- Mop after every case with disinfectant
- LR to be washed at least once a week with soap & water
- Objects not being used should be removed from the labour room
- Patients preferably should take a bath before entering the labour room or at least wash and dry the feet.
- Should change to clean clothes in the labour room
- Dust accumulating in the A/C Filter,Fans,Dome of ceiling lights etc should be cleaned
- Enema cans should be properly disinfected
- Waste disposal should be according to colour code

Instruments

- Should have separate autoclaved sets for each delivery, not assembled at random
- Separate sets for PV examination
- Autoclaved bins should have the indicator tape with date

- Horizontal autoclave is better
- A 10 L pressure cooker can be used as autoclave in small set ups
- Boiling or cidex only in emergency, if used the instruments should be fully immersed for the stipulated time
- Suction tubes, O2 masks etc to be cleaned
- Change water in the humidifier of oxygen cylinder and mark the date

Labour cots to be made of steel for easy cleaning after every case instead of rexine sheets

Proper enema would prevent soiling at second stage. Patient advised to hold enema fluid for some time before passing stools so as to have a complete evacuation

Limit number of PVs

Use sterile gloves for p/v

After ARM or in a leaking patient use clean diapers or disposable pads

Proper hand wash of attending Medical personnel

Remove bangles ,watch , ring before scrubbing

First wash with soap & water. Then scrub with a disinfectant

Clean patient with povidone iodine before draping. Leave it on to dry.

Disposable delivery mats preferred to reusable ones.

Catheterize with aseptic precautions using disposable catheters when required

If all aseptic precautions are taken with every case there is no need for antibiotics even with an episiotomy

Keep separate suture removal packs with mini instruments like an artery and few cotton balls and pads

Povidone iodine bottle, local anaesthetic bottle etc to be used properly

Remove cannulas, catheters and drains as early as possible

Wash hands properly between patients

If evidence of infection

Step up antibiotics.

Take for culture and sensitivity

If patient is responding continue the same antibiotics

Maternal collapse during labour Resuscitation protocol.

Initial assessment.

Elicit a brief clinical history.
Do a quick clinical examination.
Level of consciousness.
Pulse / B.P / Respiration.
Look for obvious bleeding.

Two Scenarios are possible.

1. Haemorrhage leading to severe hypotension & signs of poor tissue perfusion. This may lead to imminent death. This can be managed by quick volume repletion and arresting the bleeding.
2. Acute circulatory arrest — Cardiac Arrest.

Management Of Severe Blood Loss.

- Elevate legs.
- Oxygen with face mask — 4 litres/mt.
- Get I.V access. **Use 16G or 18G cannulae at least at 2 sites**.
- Get blood sample for grouping & crossmatching.
- ***Fluid Therapy.***
  N.S or R.L 1.0 L as fast as possible.
  H.E.S 1.0 L as fast as possible.
  Blood as soon as available.

Remember : Loss of I.V volume is the immediate cause of death in bleeding
Rapid volume replacement by any available fluid can avert fatality.

Monitoring

Pulse / B.P / E.C.G / Urine Output / C.V.P(if possible).

Cardiac arrest

Inability of the heart to supply oxygenated blood to the vital organs.

Major causes during labour :

Hypovolaemia.
Thromboembolism (Amniotic Fluid Embolism).
Hypoxia.
Drug toxicity.
Mendelssons Syndrome.

Diagnostic points.

- Absence of pulsation in major vessel (Carotid or Femoral)- most important.
- Unconsciousness.
- Respiratory arrest.
- Cyanosis.
- Dilated & fixed pupils.

These signs should be elicited within 5-10 seconds.

Management.

Aim : To supply oxygenated blood to the vital organs.

A **Airway**. Maintain open airway by **head tilt**.
Chin lift.
Jaw thrust.
Intubate Trachea / Use Laryngeal Mask Airway if available.

B **Breathing.**
Ventilate with AMBU BAG. 10-12 breaths per mt.

C **Cardiac compression**.
Maintain LEFT UTERINE TILT**.**
Cardiac compression 100 per mt. PRESS HARD / PRESS FAST.

D **Defibrillation.**

GET I.V.Access.

Inj. Adrenaline 0.5 mg every 3 mts.
Inj. Atropine upto 3.0mg.
Inj. $NaHCO_3$ 100 mmol.
Inj. Cacl 10% 10.0ml

After return of spontaneous cardiac action –

Maitain good perfusion pressure.
Maintain effective ventilation.
Maintain good urine output.

Neonatal Resuscitation

No time in human life is more important than the time of birth. For the mother it is the fruitful completion of a 9month struggle. So you can imagine the horror if the baby does not cry after delivery.

Why Learn Resuscitation?

Approximately 5% to 10% of the newly born population require some degree of active resuscitation at birth (e.g. stimulation to breathe). Approximately 1% to 10% born in the hospitals are reported to require assisted ventilation. More than 5 million neonatal deaths occur worldwide each year and birth asphyxia accounts for 19% of these deaths. Outcome might be improved for more than 1 million infants per year through resuscitation.

Above all this, the fact is that we do not know which baby will come out asphyxiated. When things like that occur out of the blue, at times it may be only the obstetrician or the nurse who is there to do something for the baby. I think that is the most pressing reason to learn resuscitation.

Prerequisites

The most important prerequisite for neonatal resuscitation is **being prepared**.

Anticipate Problems

It is always better to anticipate problems so as to avoid last minute hurry of finding a paediatrician. In the following high risk cases it is better to inform the pediatrician in advance and decide the time and mode of delivery.

- Preterm
- Antenatally detected anomalies
- Bleeding
- Meconium
- Foetal distress
- Maternal sedation
- Instrumental delivery
- Breech presentation

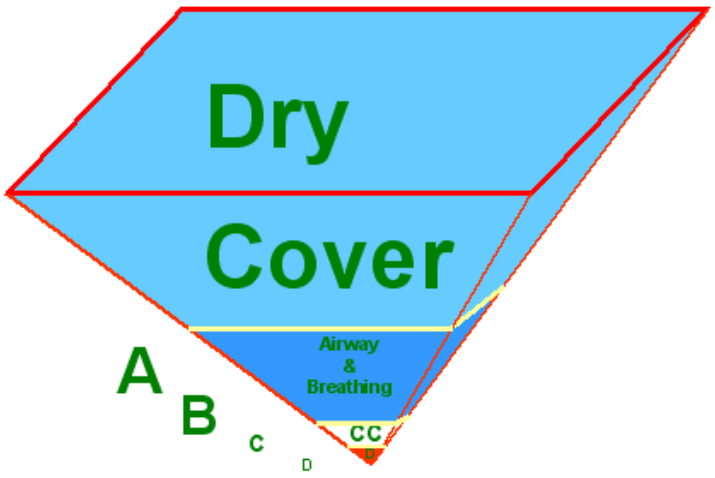
Getting Ready

Make it a habit to do the following checks once a mother is transferred to the delivery table.

1. ***Bag and mask*** — make sure that the pop off valve is working. Otherwise one may generate high pressures and may produce a pneumothorax. Also make sure that the reservoir is attached and the oxygen tube is connected. The reservoir makes sure that you give 100% oxygen for the baby.(see diagram below)
2. ***Laryngoscope*** — make sure that the laryngoscope is working. Also make sure that you always have a **new pair of batteries** in the kit. Otherwise you may be running around at the crucial time for a pair of batteries.
3. ***ET tubes*** — make sure that you have 3sizes of ET tubes — 2.5, 3 and 3.5.
4. ***Oxygen supply*** — make sure that there is oxygen supply. Also make sure that the water in the humidifying chamber is changed every day and the date of change is marked there. Remember stagnant water is a source of bacteria.
5. ***Clock*** — it is good to have a clock in the labour room and better still a stop watch. Time flies during resuscitation.
6. ***Suction*** — make sure that you have the suction. If it is central suction make sure that it works. If you do not have central suction make sure you have the bulb suction.
7. ***Heating*** — Whatever is your mode of heating available, turn it on with two towels underneath it to receive the baby. First towel is to dry the baby and the second towel is for wrapping the baby.

Priorities of Resuscitation

This can be summed up in the following inverted pyramid. The order of doing things is from top to bottom. The top portion drying and covering is required for all babies.



Management of the airway comes next and required for lesser number of babies. Cardiac compression is required rarely and the need to give drugs is extremely rare. Majority of the babies come into three categories.

Scenario 1

Good cry
Heart rate > 100
Centrally pink

Leave the baby alone!! Just wrap the baby and give him to mother

Scenario 2

Breathing not very good
Heart rate > 100
Central cyanosis

Stimulate and give oxygen

Scenario 3

Central cyanosis
Good respirations and heart rate - give 100% oxygen
Poor respiration - bag and mask

Scenario 4

Breathing inadequate
Heart rate < 100
Pale

Active resuscitation

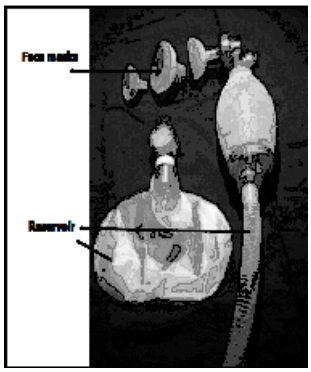
Resuscitation

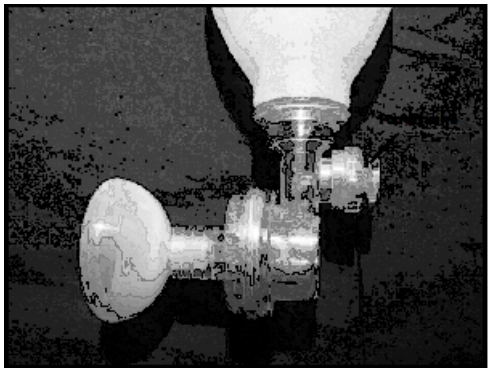
As soon as the baby is born, look for three things in the baby. (We will discuss babies born out of amniotic fluid later)

1. Respiratory effort
2. Heart rate
3. Colour

Indication for Bag & Mask

1. Apnoea or gasping respirations
2. HR < 100
    - As soon as the baby is born, look for respiration. If the baby is not breathing or if the baby has gasping respiration then the baby needs bag and mask ventilation.
    - If the baby is breathing normally but the heart rate is less than 100, then also we need to bag the baby.





- While bagging, make sure that you have the right size bag. The bag should cover the nose and mouth without going over the eyes (damage to the eyes) and going below the chin (leak around the mask).
- While bagging look for the chest wall movements.

1. If there are no chest-wall movements then
   Adjust the position of the neck so that the airway is open.
   Overflexion and overextension will prevent chest wall movements.
2. Still if the chest is not moving,
   look for leaks around the mask,
   suction the airway to remove any plugs of mucus,
   try to keep the mouth open
   try putting an airway.
3. If all these fail try increasing the pressure at which you are bagging. Normally for a 1kg baby you need to use one finger and thumb, 2kg baby two finger and a thumb and a 3kg baby three finger and thumb. Occasionally you may have to use more pressure than this.

Improvement in the patient is judged by the improvement in the colour of the baby, improvement in the heart rate and appearance of spontaneous respirations. If this is not happening then look for all the above mentioned causes first. Then look for oxygen tubing and the reservoir, whether they are connected. Also look at the abdomen, whether it is distended with air. If so you may have to decompress it by putting a large nasogastric tube.

Contraindication to B & M

In an ideal setting, i.e., when someone with skills to intubate the baby is around the following are contraindications to bagging.

- Meconium aspiration with a depressed baby
- Diaphragmatic hernia

- Inability to achieve effective ventilation through bag & mask
- Prolonged bagging is needed

When the skilled person is not available then things are different. If there is meconium aspiration bag the baby if you can't suction the trachea (see below for meconium aspiration), because a baby with meconium aspiration syndrome is better than a dead baby. In a diaphragmatic hernia put a large No. 8 or 10 nasogastric tube into the stomach and bag the baby so that the stomach will not distend and compromise the lungs more.

Chest Compressions

Cardiac compressions are indicated if the baby has a heart rate <60 despite adequate ventilation for 30 seconds.

The best method is to encircle the chest of the baby with fingers and thumbs (fingers behind and the thumbs in front) on middle third of the sternum just below the nipple line. Ventilation should continue. The rate of compression should be 120/mt. While giving compressions, pause after every third compression for giving a bag and mask ventilation. This can be achieved if the person giving cardiac compressions counts one two three bag loudly. One, two, three for cardiac compressions and bag for bag and mask ventilation.

Baby should be assessed every 30 seconds for heart rate and respiration while doing any intervention. Once the heart rate comes up above 60, cardiac compressions can be stopped. Ventilation should be continued. Reassess every 30s for breathing. Once the baby is breathing normally, bagging can be stopped. Just give oxygen but continue to assess the baby. If the baby continues to have normal heart rate and breathing, gradually wean off oxygen.

Medication

Medications are very rarely needed in resuscitation. If the heart rate continues to be below 60 or if there is no heart rate despite adequate ventilation and cardiac compressions for 30 seconds, then adrenaline is indicated.

Adrenaline is given intravenously and the dose is 0.1ml/kg of 1 in 10,000 solution. The available solution in the hospitals is 1 in 1000. This has to be diluted 10 times to make it 1 in 10,000 solution. This is done by drawing 0.1 ml of adrenaline into a 1ml syringe and diluting it to 1ml with saline. Adrenaline can be repeated every 3 to 5mts if there is no improvement.

Naloxone can be given to the baby, if the mother had been given opioids like pethidine 4hrs before delivery and the baby has a good heart rate but poor tone and respiratory efforts. It can be given IV, SC or IM. the dose is 100 microgram / kg.

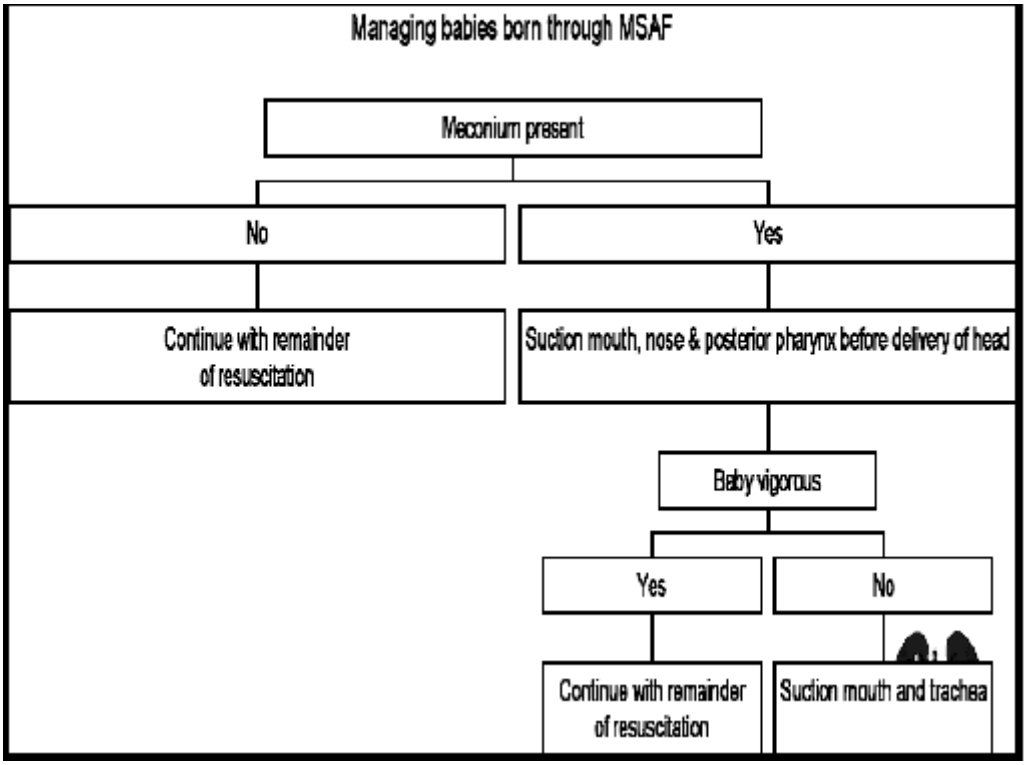
Failure to Improve

If the baby fails to improve look for

- Technical fault
- Diaphragmatic hernia
- Pneumothorax
- Severe acidemia
- Pulmonary hypoplasia
- Lung malformation

Meconium Stained amniotic fluid

If the baby cries and is active leave the baby alone. Trying to suck the trachea of a vigorous baby can do more harm than good. On the other hand if the baby is depressed, i.e. if the baby is apnoeic and having poor tone then that baby will need tracheal suction before proceeding to resuscitation.



Lessons Learned from CRMD and its implications to obstetric practice in the Community Health Centres.

Confidential Review of Maternal Deaths was started in Kerala in 2004 and the findings for 2004 & 05 were published as "Why Mothers Die- Kerala 2004 -05". There were many observations with implications for Obstetric practice in the smaller centres like Community Health Centres and First Referral Units. It is true that at present very few deliveries take place in these centres. But once obstetric services start in community health centres, the problems will crop up. We have to proceed carefully so that obstetric calamities are avoided. Otherwise the public will lose trust and will go away from such centres.

The causes of Maternal Deaths and its implications to practice in community health centres

The causes of maternal deaths are listed in table 1. Haemorrhage is topping the list. It includes APH as well as PPH. The responsibility of the peripheral centres is to identify the problems early and refer after giving first aid.

Abruptio placenta usually is a progressive condition. Often there will not be any role for conservative management, so refer early.

Placenta previa can be of varying degrees. In patients with previous caesarean and placenta previa, the possibility of morbidly adherent placenta should also be considered. In any case, placenta previa should be referred to higher centre.

PPH

PPH cannot be anticipated in every case. It may belong to atonic or traumatic variety. Active management of 3rd stage should be practiced routinely. If body of uterus is contracted and bleeding persists, possibility of traumatic pph should be considered.

While referring the patient with PPH steps should be taken to stop the bleeding. Condom tamponad is a good, practical and cheap method for atonic pph. If there is traumatic pph, tight packing may be a better option. In any case, I V fluids should be started using wide bore cannula. (16 or18 gauge). Blood may be withdrawn for grouping and cross matching and sent along with the relatives to be handed over to the higher centre. Similarly patient's relatives should be told about the potential need for blood transfusion and blood donors should be asked to go along with the patient.

	2004		2005	
	CRMD	**DHS**	**CRMD**	**DHS**
Amn. Fluid Embolism	11	6	8	5
Anaemia	1	4	3	3
Anesthetic	4	nil	nil	nil
Cerebral haemorrhage	2	nil	1	nil
Ectopic	2	1	2	1
Haemorrhage	**16**	**13**	**22**	**10**
1.APH	3	2	5	
2.PPH	12	10	14	
3.Pl.previa	1	1(accreta)	3	
Heart Disease	3	9	12	5
Hepatobiliary Diseases	9	1	6	1
Hypertensive Disorders	12	7	17	5
Lupus Syndrome	2	nil	nil	nil
Septic abortion	3		3 (MTP)	
Venous thrombo emboli	7	6	3	2
Sepsis	nil	4	7	5
Infections(other systems)	nil	3	2	2
Malignancy		3		
Accident	1	1		1
Suicide	2	1		3
Chr renal problems	nil	2	nil	1
Diabetes			1	
Homicide(burns)			1	
PPS complication			1	
Toxic epidermal necrolysis			1	
Brought dead				2
ARDS		1		1
Asthma		1		2
Pneumothorax		1		
Unknown	4	12		13
Total	**79**	**75**	**91**	**62**

Number of maternal deaths by year as reported to CRMD and DHS and their primary causes

Hypertension and Eclampsia

Hypertensive disorders constituted second commonest cause of maternal death. Severe cases of hypertensive disorders are not to be treated in a community health centre. However, cases of impending eclampsia or eclampsia may present to a community health centre and before referring first aid has to be administered in the form of antihypertensives and anticonvulsants. If available labetalol can be given slow IV (20mg). Otherwise nifedipine 10mg can be given orally. If BP is very high (above 160 systolic and 110 diastolic) and labetalol is not available, small dose of nifidipine may be given sublingually. The safe option is to prick a capsule of nifidipine and pour drop by drop the drug into the mouth, not to exceed 5mg total. A sudden drop in BP may occur if higher dose is given sublingually. The aim should be to reduce the systolic to 140 to 160mm of Hg and diastolic around 100mm of Hg.

If the patient has already thrown fits or appears to be in impending eclampsia, Magnesium sulphate should be given as 4gm IV slowly taking about 5mts to give it and 4gm of 50%solution (8ml)deep IM to gluteal region. These doses can be given without monitoring urinary output.

Once first aid has been administered, patient may be sent to higher centre with a reference letter. If MgSo4 had been given that should be clearly indicated in the letter so that overdose can be avoided at the higher centre.

ANNEXURES

EMERGENCY TROLLEY –CONTENTS

The trolley should have separate drawers to keep drugs,"IV Fluids ",IV sets Laryngoscopes, ET tubes. Facility on the side to fix oxygen cylinders, space on top to keep monitors.

- **Drugs**

Inj.Adrenaline	(5)
Inj Atropine	(5)
Inj.Ephedrine	(5)
Inj.Dopamine	(2)
Inj.Dobutamine	(2)
Inj.Lignocaine	(2)
Inj.Normal saline	(5)
Inj.Ringer lactate	(5)
Inj.Hydroxy Ethyl Starch	(5)
Inj.Nitroglycerine	(2)
Inj.Magnesium sulphate	(5)
Inj.Sodium Bicarbonate	(5)
Inj.Calcium Chloride	(5)
Inj.Midazolam	(2)
Inj.Hydrocortisone	(2)
I.V.sets	(5)
Blood set	(5)
IVcannula 16 G	(5)
20 G	(5)

- **Endotracheal Tubes**

24 g	(2)
7.5 mm (adult) -	2 Nos
3.0 mm(normal)	2 Nos
2.5 mm(premature)	2 nos
Syringes 2 ml	(10)
5 ml	(10)
10 ml	(10)

- Adhesive tapes,Ambu bags,Small scissors
- Laryngoscope —adult -1 Paediatric 1
- Oxygen cylinder with flow meter
- Cardiac monitor,Pulse oxymeter
- Defibrillator
- Suction/catheters
- Typed list of items to be prominently displayed on trolley
- Replace used item immediately
- Daily morning check of item by nurse in charge
- Weekly check by supervisory staff
- Monthly check of expiry dates of drugs and replace expired item

Modified Bishop Score (Burnett's)

	Score	0	1	2
1	Length of Cx	>1.5	1.5-0.5cm	<0.5cm
2	Dilatation	<1.5 cm	1.5-3cm	>3cm
3.	Position of Cx	Prosterior	Mid position	Anterior
4	Consistency	Firm	Intermediate	Soft
5.	Station of Presenting Part	-2 or Above	-1	0 or Below
	Total Score =10			

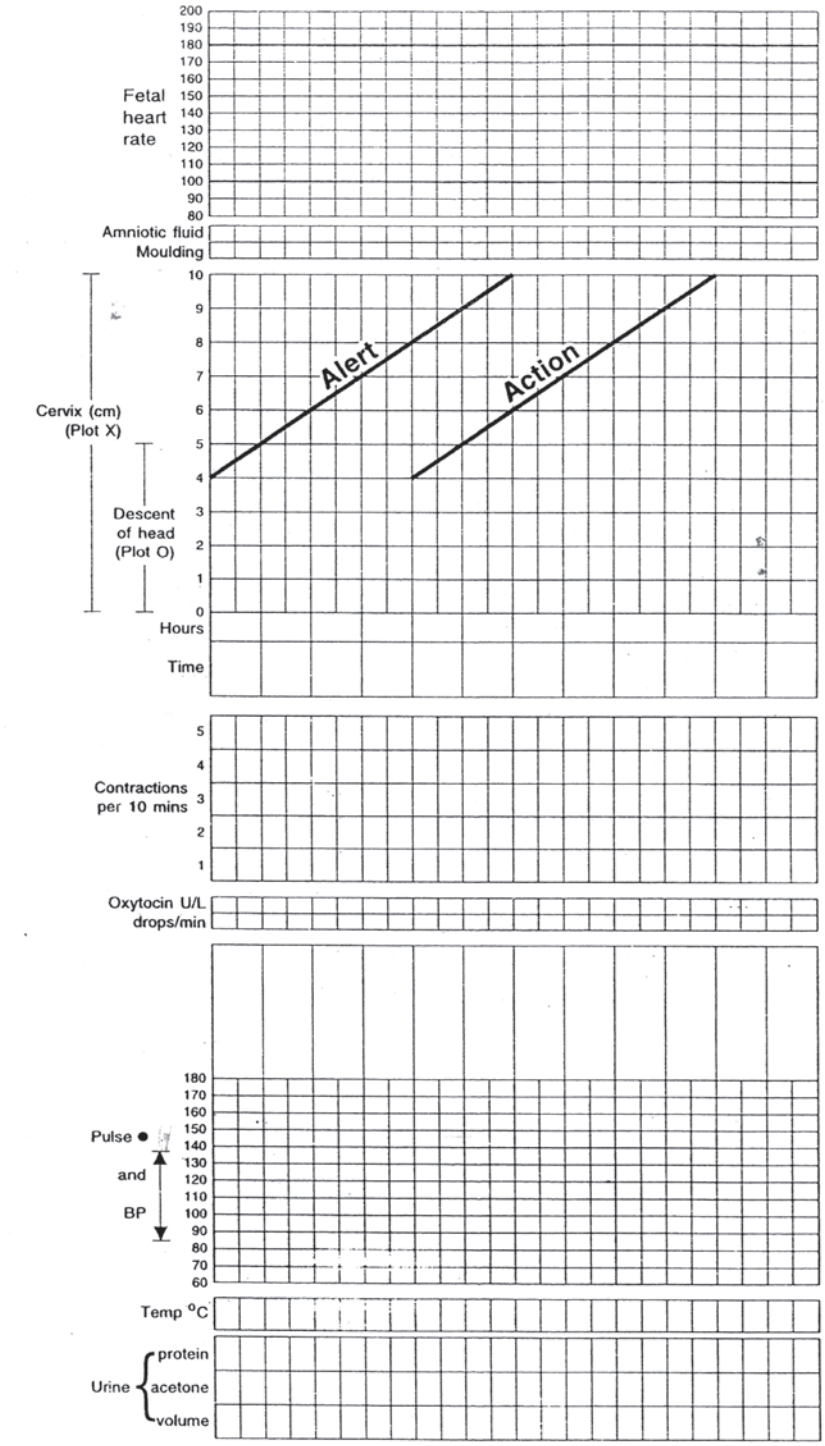
Stamp that can be used for entering p/v findings

Date.....	Time.....	Dr.....
Cx Posn.....	Cons.....	Length.....
Dil	Memb	Liq.....
PP.....	Posn.....	Station.....
Caput.....	Moulding	Pelvis.....

Partogram

Name Gravida Para Hospital Number

Date of admission Time of admission Ruptured membranes hours



ANTENATAL CARD

1

No.

Name: Age:

Husband's Name:

Gravida: Para: Living:

LMP: Cycle: EDD:

Relevent Fam. Hist:

Obst. Hist:

3

Investigations

Hb	Bl Group	Bl. Sugar R/FBS
VDRL		
Urine		
HIV		
HBs Ag		
Others		

2

Name : Special Aspects

HEART HEIGHT BL. GROUP EDD

Date	Wt.	B.P.	Urine	Gest Age	Fund Ht.	Pre-sent	PP to Brim	F.H.	Next Visit	Treatment & Remarks	Initials

MAGNESIUM SULPHATE REGIME

Eclampsia

0 hrs 4 gm (20%) slow I.V. over 5 mts +
4 gm deep IM with 1 ml 1% xylocaine
0+2 hrs 4 gm IM or slow I.V.
0+6 hrs 4 gm IM or slow I.V.

Continue 4th hourly.

If syringe pump or infusion pump is available, give I.V. infusion at the rate of 1 gram per hour.

Impending Eclampsia

Loading dose 4 gm IM and 4 gm I.V. as at 0 hr for Eclampsia.
4 gm deep IM or I.V. 4 hourly.

Monitoring

Before every injection, check:

- Patellar reflex
- Respiratory rate
- Urine output

Antidote

10 ml of 10% Calcium Gluconate.

Preparation

50% solution	8 ml is 4 gms
25% solution	16 ml is 4gms
20% solution	20 ml is 4 gms

Administration

IM injections : Should be at gluteal region,
Use 50% solution.

IV injection : Give slowly, at least 5 mts for 4 grams
Dilute to at least 20%

IV infusion : 2 hours after loading dose of 8 gm, $MgSO_4$ can be given as IV infusion using microdrip set or syringe pump or infusion pump, at the rate of 1 gm per hour

DRUGS IN ACUTE HYPERTENSIVE CRISIS

Aim : Bring BP down to140 systolic and 90 diastolic

LABETALOL I V

- 20mg IV, Double every 10 minutes till desired BP fall is achieved
- Maximum not more than 220 mg in one hour

NIFIDIPINE

- Oral 10-30 mg every 4-6 hrs
- Sublingual - Not more than 5mg.
  (Use only if parenteral antihypertensives not available)

NITROGLYCERINE

- 25mg in 500ml. Saline. Give 30ml /hr(8drops/mt)

DRUGS IN ACUTE VASCULAR COLLAPSE

DOPAMINE

- To give 5 microgm/kg/mt in a 50 Kg patient Maximum upto 20 microgram/mt
  Add 200mg to 500ml of 5% dextrose. Give 37.5 ml /hr (10-40 drops/mt). Titrate to make SBP 100

DOBUTAMINE

- To give 5microgm/kg/mt in a 50 kg patient Maximum upto 20 microgram/mt
  Add 250mg to 500 ml of 5% dextrose. Give 30ml/hr (8-36drops/mt).Titrate

ADRENALINE

- Available as 1mg/ml. Give IV bolus 1ml every 3-5mts.
- If no iv line available, dilute 1mg in 10ml saline &give endotracheally

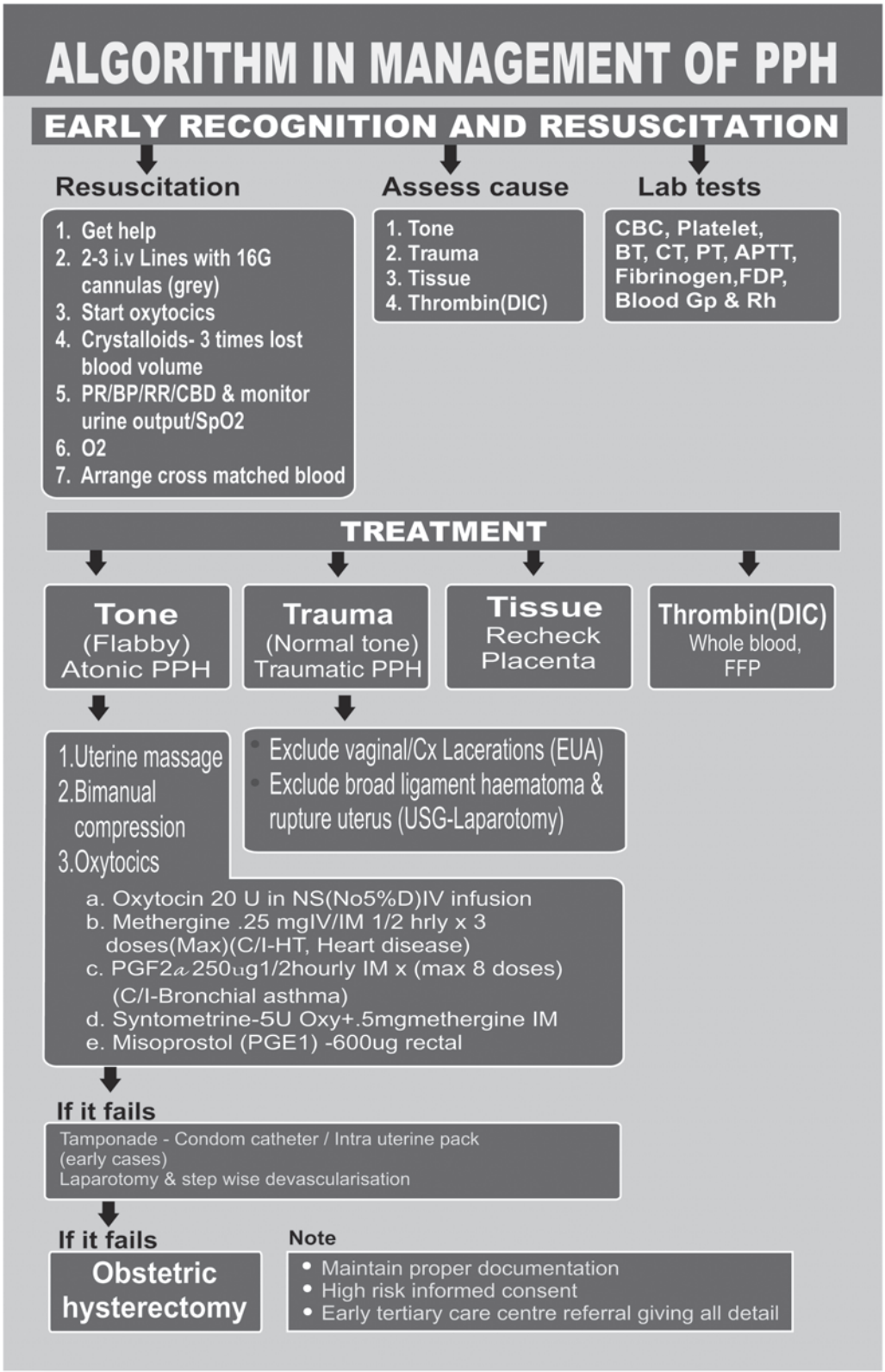
OTHER DRUGS

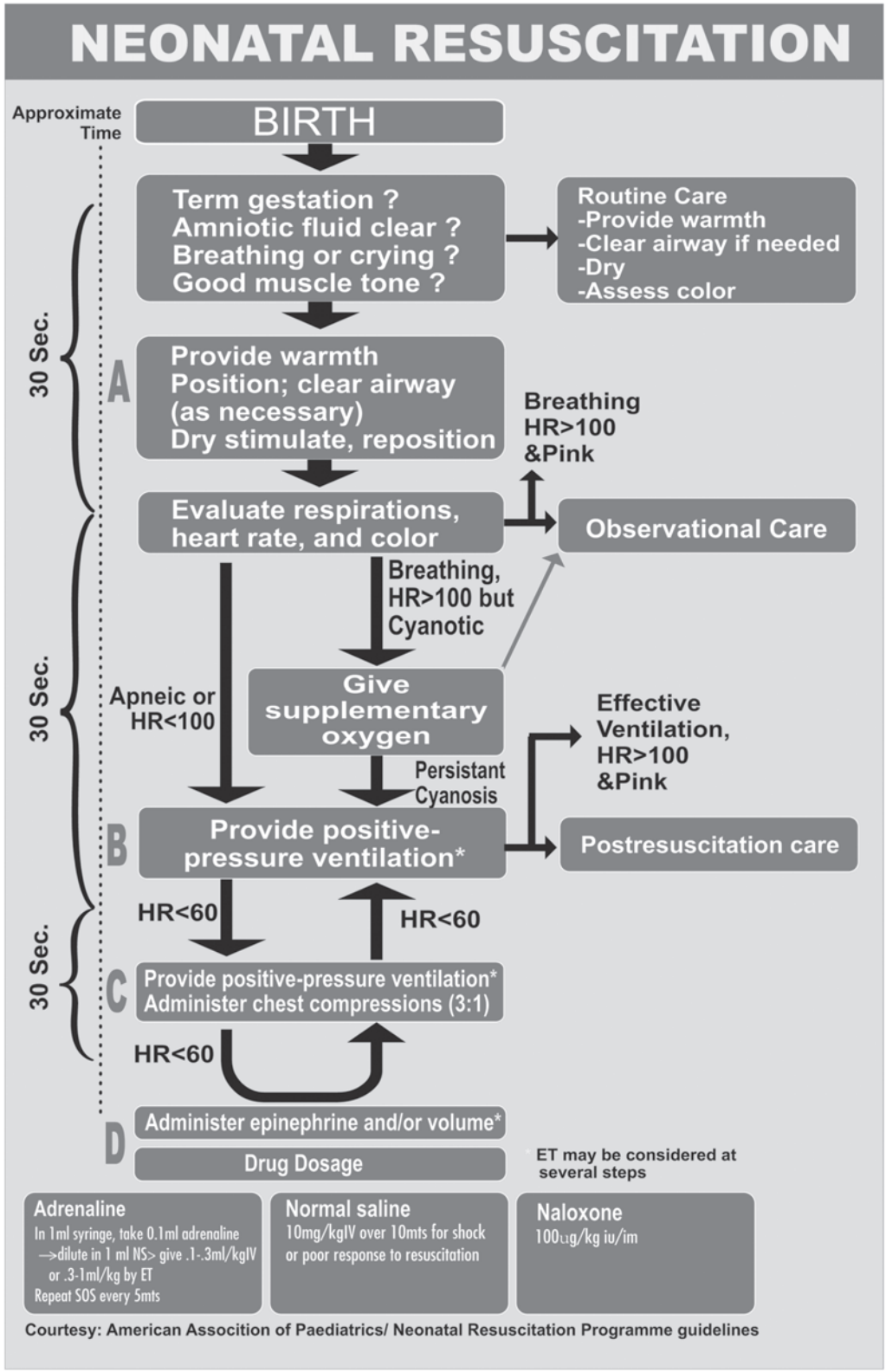
ATROPINE

- One ampoule (0.6mg) give IV bolus Repeat every 5 mts. till desired effect achieved maximum 5 doses

HYDROCORTISONE

- One ampoule (100mg) given IV


ALGORITHM IN MANAGEMENT OF PPH
EARLY RECOGNITION AND RESUSCITATION
Resuscitation
1. Get help
2. 2-3 i.v Lines with 16G cannulas (grey)
3. Start oxytocics
4. Crystalloids- 3 times lost blood volume
5. PR/BP/RR/CBD & monitor urine output/SpO2
6. O2
7. Arrange cross matched blood
Assess cause
1. Tone
2. Trauma
3. Tissue
4. Thrombin(DIC)
Lab tests
CBC, Platelet, BT, CT, PT, APTT, Fibrinogen,FDP, Blood Gp & Rh
TREATMENT
Tone (Flabby) Atonic PPH
Trauma (Normal tone) Traumatic PPH
Tissue Recheck Placenta
Thrombin(DIC) Whole blood, FFP
1.Uterine massage
2.Bimanual compression
3.Oxytocics
Exclude vaginal/Cx Lacerations (EUA)
Exclude broad ligament haematoma & rupture uterus (USG-Laparotomy)
a. Oxytocin 20 U in NS(No5%D)IV infusion
b. Methergine .25 mgIV/IM 1/2 hrly x 3 doses(Max)(C/I-HT, Heart disease)
c. PGF2α 250ug1/2hourly IM x (max 8 doses) (C/I-Bronchial asthma)
d. Syntometrine-5U Oxy+.5mgmethergine IM
e. Misoprostol (PGE1) -600ug rectal
If it fails
Tamponade - Condom catheter / Intra uterine pack (early cases)
Laparotomy & step wise devascularisation
If it fails
Obstetric hysterectomy
Note
Maintain proper documentation
High risk informed consent
Early tertiary care centre referral giving all detail


NEONATAL RESUSCITATION
Approximate Time
BIRTH
Term gestation ?
Amniotic fluid clear ?
Breathing or crying ?
Good muscle tone ?
Routine Care
-Provide warmth
-Clear airway if needed
-Dry
-Assess color
30 Sec.
A
Provide warmth
Position; clear airway (as necessary)
Dry stimulate, reposition
Breathing
HR>100
&Pink
Evaluate respirations, heart rate, and color
Observational Care
Breathing, HR>100 but Cyanotic
30 Sec.
Apneic or HR<100
Give supplementary oxygen
Effective Ventilation, HR>100 &Pink
Persistant Cyanosis
B
Provide positive-pressure ventilation*
Postresuscitation care
30 Sec.
HR<60
HR<60
C
Provide positive-pressure ventilation*
Administer chest compressions (3:1)
HR<60
D
Administer epinephrine and/or volume*
Drug Dosage
* ET may be considered at several steps
Adrenaline
In 1ml syringe, take 0.1ml adrenaline →dilute in 1 ml NS> give .1-.3ml/kgIV or .3-1ml/kg by ET
Repeat SOS every 5mts
Normal saline
10mg/kgIV over 10mts for shock or poor response to resuscitation
Naloxone
100ug/kg iu/im
Courtesy: American Assocition of Paediatrics/ Neonatal Resuscitation Programme guidelines

Confidential Review of Maternal Deaths, Kerala

Form A

Name of Deceased
Age :
Hosp.no. :
Date & time of death :

Name of husband :
(If unmarried, widow or divorced, note that and enter name & address of father)

Address
(Husband's)

District in which husband's residence is situated :

Name of the doctor in charge (where she died). :
Address of the doctor in charge :

Contact Telephone No. :
E-mail address

Address of the hospital (where she died) :

If referred from another centre, details of the referring centre:

Name and address of the referring doctor. :

Name and address of the referring hospital :

Signature of the reporting doctor

Please send to
Dr. VP Paily
Coodinator CRMD
Vakkanal House,East Fort,
Thrissur- 5
Tel No0487 2336222

Confidential Review of Maternal Deaths, Kerala

Form B

TO BE KEPT CONFIDENTIAL AT ALL TIMES

1. Maternal death review case number

2. Primary (underlying) cause of death.....

3. Final (with contributory cause if applicable) cause of death.....

.....

4. Where she died Level of facility in which she died (tick one)

CHC clinic	Level 1 Hospital	Level 2 Hospital	Level 3 Hospital	Home	Other Specify

Government	Private

5. Basic details

Age at death ☐ Married? ☐ Y or ☐ N

Level of mothers education — NL-Nil, Pr-Primary, Sc-Secondary Gr-Graduate, Pr-Professional ☐ Her occupation ☐

Level of husbands education — NL-Nil, Pr-Primary, Sc-Secondary Gr-Graduate, Pr-Professional ☐ Husbands occupation ☐

Religion

Hindu	
Muslim	
Sikh	
Christian	
Other	

Distance from home to nearest health facility ☐ Kms

Place of home

Urban	
Urban slum	
Semi-rural	
Rural	

6. Details at time of death

Gravida ☐ Parity ☐ Gestation in completed weeks if antenatal or at delivery ☐

7. Admission at institution where death occurred (if applicable)

Interval between admission and death (if less than 48 hrs please state hours only)
If appropriate interval between delivery and death (if less than 48 hrs please state hours only)

Days	Hours

Place of death in facility

Theatre		ICU	
Casualty		Other (please state)	
Antenatal ward			
Postnatal ward			
Delivery room			

Status on admission

Ectopic	
Miscarrying/aborting	
Post miscarriage or abortion	
Antenatal	
In labour	
Delivering/third stage	
Postpartum	

Was her condition?

Dead on arrival	
CPR needed	
Critical	
Worrying but stable	
Stable	
Other: please specify	

Period of Gestation on admission

8. Details of antenatal care (ANC) (Details to be obtained from ANC record with the patient if necessary or available)

Did she receive antenatal care Y/ N/ NK (not known)

How many ANC visits? (if known)

Where did she receive ANC

Primary level	
Secondary level	
Tertiary level	
At doctors private consultation	
Other :	

Government	
Private	

Who provided ANC ?

Consultant		Medical Officer/GP	
Registrar/ Junior Dr		Midwife	
		Nurse	
		TBA	

Other: please specify

Please provide a short summary of relevant past medical history (eg hypertension, immune disorders, thrombosis, heart disease, diabetes etc.)

Please provide a short summary of past obstetric history and any previous problems

Please identify any antenatal risk factors present in present/recent pregnancy with Y/N in relevant box

	Y	N
Hypertension		
Proteinuria		
Glycosuria		
Abnormal lie		
Severe anaemia		
Previous C/Section		
Other: please specify		

HIV status | | | | e

T.T. immunisation | | |

Please provide short summary of ANC including any medications (prescribed or otherwise)

9 . Intrapartum care

Had the woman delivered before arrival? Y | N

If yes where? Tick one

Home	CHC clinic	Level 1 Hospital	Level 2 Hospital	Level 3 Hospital	Other Specify

Tick one

Government	Private

Details of labour:

	Hrs	Minutes
First stage		
Second stage		
Third stage		

Was a partogram used? | |

Duration of labour

Who supervised her labour?

No-one		Registrar or junior	
TBA		GP/other Dr	
Nurse		Other: specify	
Midwife			
Consultant			

Type of delivery

Tick one

Undelivered					Person delivering	
Died during delivery					Specialist	
Vaginal vertex unassisted					Specialist in training	
Vaginal breech					Other doctor	
Vaginal assisted		Forceps	Vacuum		Nurse/midwife	
					Other: State	
Caesarean section		Elective	Emergency			

If Caesarean Section state time (hrs and minutes) from decision to perform to actual delivery of baby:

Hrs	Mins

If there was a delay of more than 30 minutes what was this due to?

If assisted vaginal delivery, describe any problem or complications associated with it.

If caesarean, describe any problem or complications associated with it.

10.Neonatal outcomes

Baby(ies)	Gestation	Birth weight (gms)	Sex	Live birth M/F	Early neonatal death (within first 7 days)	Stillbirth
1						
2						
3						

Please provide any other relevant observations on labour or delivery

11. Anaesthesia

GA	Epidural	Spinal	Local

Status of anaesthetist (please circle) Consultant/ Registrar/Junior/Other

12.Postnatal problems

Please describe any postnatal problems including pyrexia, PPH, retained placenta

Was Post Mortem performed?	Y	N	If performed please attach an anonymised copy of the report
Is there a police case registered?	Y	N	

13. Results of any pathological investigations (please attach anonymous copies)

14. Please describe the involvement of any other specialists (eg nurse/midwife, anaesthetist). If their involvement was significant please ask them to provide, and attach, a brief anonymous statement of their actions.

15. Your case summary. Please supply a short case summary of the events leading to her death.

16. Can you think of any steps/actions, which if taken earlier, might have prevented this death?

17. Any avoidable factors you could identify?

18. If you were treating this case again what changes would you make that will help to avoid maternal death?

19. What else would you recommend for avoiding maternal deaths in similar circumstances?

Please return to **Dr. V.P. Paily,**
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Parturition Register - Sample Page

S.No. Monthly, yearly	MRD No.	Booked / Unbooked	Name Age Blood Group	Name of Husband	Height Weight	Date and Time of Admission	Gestational age in Weeks & Days	Presentation	Date & Time of Delivery	Type of Delivery N / Abnl	Sex of Baby	Weight of Baby	Cord Lenght Placental Weight	Perinatal events	Apgar	Indication for Induction Mode of Induction Intervention Del. interval	Risk Factors	Details of Labour and Remarks	Conducted by

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