LABOUR WARD PROTOCOL
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LABOUR WARD PROTOCOL

General introduction

This protocol provides guidelines for the management of Labour Ward activities. It is hoped that by providing clear guidelines, it will assist in the efficiency of the Ward and the provision of high quality, evidence-based medical care to all pregnant mothers. It should be implemented with flexibility and is not intended to replace consultation which is always encouraged. However, in the interest of uniformity and avoidance of confusion, deviations from the protocol should be kept to a minimum. Any deviation of patient management from the protocol should have the prior approval of the attending doctor or in the case of nursing/midwifery protocol, the senior midwifery manager.

This protocol is not intended to be a comprehensive obstetric textbook and there will be situations which are not covered by this protocol. Use of current scientific data and in particular the textbook “A Guide to Effective Care in Pregnancy & Chilbirth” (Eds: Enkin M, Keirse M, Renfrew M, & Neilson J), is encouraged (a recent copy is available on the Labour Ward).

Aims

To achieve a safe delivery without injury to mother or baby. As far as is safely possible, the mother’s wishes and expectations should be respected.

The Key to success:

- Good team spirit
- Good communication
- Regular audit of work
- Effecting changes where needed
- Education/Research
Abbreviations

In order to restrict the widespread use of abbreviations it has been found necessary to draw up a list of accepted abbreviations for the Maternity Unit. These are:

ANC   ANTENATAL CLINIC
APH   ANTE PARTUM HAEMORRHAGE
ARM   ARTIFICIAL RUPTURE OF MEMBRANES
BBA   BORN BEFORE ARRIVAL
BP    BLOOD PRESSURE
CS    CAESAREAN SECTION
CTG   CARDIO TOCOGRAPH
FBS   FETAL BLOOD SAMPLING
FHHR  FETAL HEART HEARD REGULAR
FSE   FETAL SCALP ELECTRODE
GA    GENERAL ANAESTHETIC
HVS   HIGH VAGINAL SWAB
IOL   INDUCTION OF LABOUR
IUCD  INTRA UTERINE CONTRACEPTIVE DEVICE
IUD   INTRA UTERINE DEATH
IUGR  INTRA UTERINE GROWTH RETARDATION
IV    INTRAVENOUS
IPPV  INTERMITTENT POSITIVE PRESSURE VENTILATION
LOA   LEFT OCCIPITO ANTERIOR
LOL   LEFT OCCIPITO LATERAL
LSCS or LUCS - LOWER (UTERINE) SEGMENT CAESAREAN SECTION
LW    LABOUR WARD
Mls   MILLILITRES
MSU or MSSU- MID-STREAM SPECIMEN OF URINE
NPO   NIL PER ORIS (NIL BY MOUTH)
OP    OCCIPITO POSTERIOR
Palp  PALPABLE
PPH   POST PARTUM HAEMORRHAGE
Resp  RESPIRATIONS
ROA   RIGHT OCCIPITO ANTERIOR
ROL   RIGHT OCCIPITO LATERAL
SB    STILLBIRTH
SBR   SERUM BILIRUBIN
SCBU  SPECIAL CARE BAY UNIT
SROM  SPONTANEOUS RUPTURE OF MEMBRANES
Temp  TEMPERATURE
VBAC  VAGINAL BIRTH AFTER CAESEREAN
VE    VAGINAL EXAMINATION

Please avoid using other abbreviations as they may be inappropriately interpreted.
SECTION 1: ADMINISTRATION AND POLICIES

ADMINISTRATIVE AND PROFESSIONAL RESPONSIBILITIES FOR THE UNIT AND INDIVIDUAL PATIENTS.

1. The supervisor for Obstetric/Neonatal Unit in conjunction with the Head Nurse is responsible for the nursing administrative functions of the unit which includes policies, staffing, supplies and equipment, orienting, instructing and supervising personnel.

2. The Chief Medical Officer or his designee (Health Service OB/Gyn) is responsible for the administration of the physician component of patient care for the unit, including maintenance of standards, policies, protocols, and resolution of conflicts on bed utilization.

3. Nurse midwives will assume responsibility for complete care and management of all maternity patients under the direction of the attending doctor, while being cognizant of the Hospital and Nursing Unit Policies and standards.

4. Registered Nurse Midwives/Neonatal trained staff will assume responsibility for patient care and management according to their education, training and experience.

5. The Perinatal Committee monthly meetings will be chaired by the Health Service OB/GYN. Midwives and doctors utilizing the obstetric unit should attend these meetings as patient care reviews, policies and other unit related activities will be discussed at these meetings.

CRITERIA FOR ADMISSION

Section 1 revised (Pages 7 & 8) - 07.02.2002:

1. All women with a pregnancy of 24 or more weeks gestation will be admitted to the Maternity Unit.
   Women with a pregnancy of 20 – 23 weeks gestation with obstetric indications for admission may also be admitted to the maternity Unit. In such cases the indications must be clearly defined by the physician.

2. Mothers and infants classified as a BBA (isolated from general Unit population).

3. Elective cases for Caesarean Section.
PROCEDURE FOR ADMISSION

• Clients attending the Antenatal Clinic at Public Health Unit, GT Health Services Complex will be booked by a qualified member of the Public Health Team. Pertinent antepartum records will be kept in a file box and on the maternity unit.

• Private physicians are expected to send a list of their booked cases to the supervisor of the unit and cases updated as necessary. Patient records are to be made available to the unit 3 weeks prior to delivery and arrangements made to keep records updated until delivery. In case of an emergency admission files are to be made available as soon as possible by the attending physician.

• Elective Caesarean Section should be booked in advance with the Operating Theatre and the Maternity Unit and seen in clinic by the Anaesthetist. A copy of the patient admission slip is to be sent to the Maternity Unit.

• Due to the limited bed-space in Maternity, OB/GYN cases less than 24 weeks with non-Obstetric medical problem will be managed on the medical floor. Should the physician wish to admit to the Maternity Unit, the nursing supervisor or head nurse should be consulted and consideration should be given to accommodate the admission.

• Unbooked cases will be admitted under the Government Obstetrician. Routine admission to be done, antenatal record completed as far as possible, total bloodwork (CBC, Group, RH, VDRL, HIV, Sickledex, Rubella) done as soon as possible. It is to be noted that should a patient state that she has been attended in the past by a private physician and the admitting nurse noted that she is not listed as his patient, the relative and patient should be advised to contact the physician to ascertain if he/she will manage their case. If response is negative she will be accepted as a hospital patient and further managed by OB/Gyn hospital team.

• Phone information regarding condition of patient in labour must be limited to maintain patient confidentiality. Confidential information on labouring women may only be given with her consent to her partner or nominated person. The name and relationship of caller should be ascertained before giving any information. It is permitted to state “patient is in labour and progress is satisfactory” or “patient is not in active labour”. Details such as dilatation of cervix should not be given. Post delivery information should be limited to “mother has delivered and both she and baby are satisfactory.”

• All patients are to register with Records and Business Office before arrival at the ward. However, patients in labour may be admitted directly to the Obstetric Unit. A relative or other person can then go to the Business Office and register the patient. During non-office hours (after 11 p.m.), the (red) admission form is completed by the admitting nurse/midwife, forwarded for registration and docket to be obtained as soon as the
office opens. Patients' dockets may be obtained by the overall supervisor on duty during non-office hours. These would be needed in cases where surgery is expected.

**Admission routine:**

- Non-labouring patients admitted to room.
- Labouring patients or patients with complication i.e. severe preeclampsia or A.P.H admitted to Labour unit Observation Rooms.
- All patients entered in admission register on ward - year #, month #, name, age, add, next of kin relationship, telephone # and Doctor.
- ID bracelet attached to right wrist. Include name, age, ward e.g. : Susan J. Smith, Age 24 years, Mat. WD
- History taken from patients - include allergies, time of last meal, relevant Past Medical History. Time of onset of regular contractions or SROM.
- Antenatal booklet obtained and admission set completed.
- **Valuables:** Instruct patients that valuables cannot be kept on ward or in the suitcase. They should be returned home or sent for safe-keeping in the Business Office. In these cases, Business Office staff will come and receive valuables, giving receipt for such, to patients. A "valuables Book" is kept on ward for emergency receipt of small articles e.g earrings, which may have to be removed prior to emergency surgery. In these cases, the valuable is placed in an envelope, itemized on front of the envelope and in book, the envelope is sealed in front of the patient and the book signed by patient and nurse, the items is then placed in DDA cupboard only until the patient returns to the ward and can receive item or until Business Office opens. Book has to be signed by patient and nurse on return of item.
- The notes will be checked to ascertain the parents birth plan and any particular instructions from the obstetrician. Particular reference must be made to the specific instructions written on the admission page regarding the mother's management in labour. Details of SCBU Alert need also to be noted and appropriate action taken.
- Maternal vital observations are taken - BP, Pulse, Temp, Resp. Urine (clean catch specimen) is tested with Labstix.
- Abdominal palpation is performed and fetal heart auscultated and findings recorded in nursing notes. A short fetal heart tracing CTG should be done for 20 mins.
- A baseline vaginal examination should be carried out, unless there is a contra-indication. Aseptic technique should be used and fetal heart auscultated before and after examinations. Examination findings must be recorded with date and time of procedure and signed.

Labour is diagnosed in any woman with regular contractions which are palpable and with evidence of progressive cervical effacement or dilatation. A partogram must be commenced once established labour has been confirmed. Studd curve must also be used with the partogram. Use the line just below (and not above) the cervical dilatation at the start of the partogram. All observations should be entered on partogram.
Observations

Half hourly:
- BP
- Fetal heart
- Uterine contractions - length, strength and frequency
- Vaginal loss - colour of liquor

Four hourly:
- Encourage micturition
- Urinalysis
- Vaginal Examination

Emergency Admissions

- Patient to be assessed by admitting midwife.
- Attending physician to be informed of admission and nursing assessment.
- Notify nursing supervisor on duty.
- Carry out procedures as directed by physician.

NOTIFYING PHYSICIAN OF CHANGE IN PATIENT CONDITION

- In the event that there is an acute change in the patient's condition, the attending physician shall be notified immediately. If the attending obstetrician is unavailable:
  - Contact Casualty officer for assistance or inform the Chief Medical Officer who will provide necessary staff to meet the patient care needs.
  - For public patients, the other doctor(s) in the obstetric team should be contacted (e.g. if the registrar is not available, the consultant should be contacted)
  - Render all appropriate measures until the attending obstetrician arrives.
- A directory of all medical staff (affiliated with the department) will be kept on the unit. The directory will include office, personal phone and beeper number. The Obstetric, Paediatric and Anaesthetic “on call” roster should always be available.

On-call beeper system

After normal working hours should the nurse need to contact an Obstetrician he/she should first try to reach him/her by telephoning his/her home. If no answer then he/she should page the Obstetrician identifying the unit and transmitting the necessary message. Page should be repeated at a ten (10) minute interval, if no reply has been obtained from the initial page.
TRAFFIC CONTROL

- Visitors shall be limited to relatives whenever possible and the nursing supervisor or charge nurse has the prerogative to determine visiting policy as deemed necessary for each patient.

- Visiting for fathers should be as flexible as possible but overnighting will be discouraged.

- Partner/Relative or friend may stay with patient while laboring and may be allowed into the delivery room with the permission of the midwife or attending physician. It should be clearly understood that should an emergency arise they will be asked to leave the room while treatment is being administered.

- Grandparents and siblings may be allowed to view babies or visit with mother barring any medical problems (cough and cold, rashes, etc). Children should remain in room with parent and visit should be kept to a minimum.

- Only authorized personnel allowed in nursery area and nursing station.

- Private duty nurses are not allowed to give care during labour/delivery. They may be employed for post-natal or surgical care and will report to the nurse in charge of the shift and render all necessary professional care (including documentation) to her patient.

WARD REGULATIONS

1. Televisions and battery operated radios will be allowed on units.
2. Flowers to be kept in room at the discretion of staff.
3. Handling of infant will be restricted to parent or grandparents.
4. Upon discharge a staff member will accompany mother and infant to their vehicle-the infant being transported by a staff member.
5. Depending on patient’s condition discretion may be taken to allow a family member to remain overnight with patient. Approval to be sought from nursing office.

INTERNAL AND EXTERNAL DISASTER (or High Patient Occupancy)

In the event of a disaster drill, the Maternity/Neonatal nursing supervisor or designee will assess the bed situation to determine possible discharges in order to make beds for incoming patients. In an actual disaster, the nurse would contact the appropriate physician and discharge all eligible patients out of the units to make space for emergencies.
EMERGENCY EQUIPMENT/SUPPLIES

- The Obst/Neo Unit will maintain an emergency cart equipped with a monitor and defibrillator, specified emergency drugs, suction and intubation equipment.

- All nurses will be responsible for the proper stocking of all special trays, drugs and supplies maintained within Obst/Neo Unit. All supply stock should be checked every shift (minimum daily).

- The Maintenance Department has the responsibility to maintain all patient monitoring systems and should be notified of any equipment hazardous to patient's safety or corrective action needed. This department will also conduct routine checks and maintenance of all equipment.

- Any supplies or drugs utilized during emergencies should be promptly replaced.

EDUCATION

Orientation

- Nursing Officers working in the department will undergo a 4 week period of orientation under the direction of the senior nursing personnel in the service. The orientation will consist of a perceptor system to ensure that new personnel are provided with individualized attention and time set aside for new officers to familiarize her/himself with operating policies and procedures of the department.

Continued education

- It is expected that all personnel will attend continuing education programs sponsored periodically by the hospital or by outside agencies. These programs should focus on hospital and on particular needs of the unit staff. It is anticipated the new education aids will be incorporated into our program as they become available. In-house staff with specific training and skills will be utilized whenever possible to offer training to colleagues.

- In accordance with nursing policy all personnel will annually attend the mandatory education programs, which are, CPR, Infection Control, lifting and Safety. In addition all officer must attend a minimum of ten (10 hours) continued education hours annually.

- New Staff: CPR and IV Therapy course shall be completed during the first six (6) months of employment. ACLS is recommended but not required at this time for Obstetrical staff. Neonatal staff to be PACLS trained.
ELECTIVE CAESAREAN SECTION

- All elective caesarean sections should be booked in advance.
- All patients for elective CS should be cross-matched for 2 units of blood.
- Elective CS should be performed in the morning. Patients are usually admitted on the evening prior to surgery. In certain circumstances it may be possible for the patient to come in the early morning, on the day of surgery if agreed by the midwifery supervisor, anaesthetist and obstetrician.
- One birth partner is invited to be present in the theatre if the CS is being done with regional analgesia (Spinal or Epidural)
- Paediatric presence is advisable for all caesarean sections and is mandatory in the following circumstances:
  - premature
  - placenta praevia
  - fetal abnormality
  - breech presentation
  - multiple birth
  - transverse lie
  - IUGR
  - fetal distress / reduced liquor volume
- The duty paediatrician should be informed by the obstetrician if a caesarean section is anticipated so that they can be available for the delivery.

EMERGENCY CAESAREAN SECTION

1. Attending obstetrician will:
   - Contact the Anaesthetist as soon as possible to ascertain expected starting time and any pre-operative instructions.
   - Ensure that the operating theatre staff have been informed (telephone theatre directly if during working hours; if outside working hours ensure that the nursing supervisor has been informed -usually done by the midwife)
   - Obtain written consent from the patient.
   - Contact the Paediatrician for attendance at the caesarean section.
   - Assist the midwife in her duties as shown below
2. The midwife will:

- Alert the nursing supervisor on duty of pending caesarean section. The nursing supervisor will contact the theatre nursing staff “on call” (if outside working hours), inform them of the emergency case and open operating room (OR).

- Prepare the patient immediately for surgery following the procedure below:
  - Set up IV.
  - Administer Zantac 50mg IV.
  - Maxolon 10-15mg IV.
  - Shave - incisional area to the symphysis pubis.
  - Insert urinary catheter.
  - Ensure surgical consent form is completed.
  - Make arrangement to take resuscitaire to OR.
  - Transport patient to OR as soon as possible.

3. Laboratory staff to be called usually only after all the above have been completed (for group and cross-match two units of blood if not already done). In cases of massive antepartum haemorrhage blood should be asked for earlier according to the obstetrician’s instructions.

4. Duties of Operating Room staff:

- The first nurse to arrive in OR:
  - calls for the patient
  - changes into scrubs
  - opens packs, sets etc. for the case
  - scrubs and sets up trolley

- The second nurse “on call”:
  - checks the patient and documents
  - changes into scrubs
  - assists colleague in preparations for the case
  - patient to be taken into OR when the anaesthetist is present.
  - relieve midwife so that she can change into scrubs.

NB. Operating room should have a trolley setup with everything needed for a caesarean section at all times.
WARD READINESS

The maternity ward should be in readiness at all times for deliveries and to manage obstetrical emergencies. Standard supplies which should be available are:

For mother - Doptone, suction, oxygen, oxytocics, light source, IV fluids and sets, delivery pack with sterile supplies.

For infant - Suction, oxygen, laryngoscopes, ET tubes with introducers, drugs, heat source, good light, IPPV apparatus, oral airways and sterile towels.

Ensure easy availability of crash cart at all times.
SECTION 2. CLINICAL GUIDELINES

INPATIENT CARE OF WOMEN IN LABOUR

• All women admitted to the Labour Ward will have a named midwife allocated to them.

• All staff will introduce themselves to the parents and explain their role.

• All women will be admitted by a midwife. The notes will be checked to ascertain the parents birth plan and any particular instructions from the obstetrician. Particular reference must be made to the specific instructions written on the admission page regarding the mother’s management in labour. Details of SCBU Alert need also to be noted and appropriate action taken.

• Maternal vital observations are taken - BP, Pulse, Temp, Resp. Urine (clean catch specimen) is tested with Labstix.

• Abdominal palpation is performed and fetal heart auscultated and findings recorded in nursing notes. A short fetal heart tracing CTG should be done for 20 mins.

• A baseline vaginal examination should be carried out, unless there is a contra-indication. Aseptic technique should be used and fetal heart auscultated before and after examinations. Examination findings must be recorded with date and time of procedure and signed.

• Labour is diagnosed in any woman with regular contractions which are palpable and with evidence of progressive cervical effacement or dilatation. A partogram must be commenced once established labour has been confirmed (usually when cervix is 3 or more cm dilated). Studd curve must also be used with the partogram.

• All patients in labour are to be cared for by a Registered Midwife or Nurse qualified by experience in Obstetrics. Deliveries are to be conducted by Registered (certified) midwives or the attending physician. All Hospital / Clinic patients in normal labour are delivered by the Midwife.

• Patients of Private Physicians will be monitored/cared for by the midwife who will inform the private obstetrician of the patient’s progress. The private obstetricians are responsible for the management, monitoring and delivery of their patients. In the interest of the mother and/or the baby’s safety, imminent births will not be impeded to facilitate the arrival of the physician. If a private physician is unavailable or impossible to reach, then, if necessary, the “on call” obstetrician for the hospital should be contacted.

• A minimum of two trained personnel should attend all normal deliveries.
• Patients are permitted to have ONE person with them during labour and delivery for emotional and psychological support. This person should be the person of her choice. The patient should be informed that her companion may be asked to wait outside the room during certain procedures. This is left to the discretion of the attending doctor/midwife. There is no need to wear cap and mask in the delivery room; overshoes may be worn.

• Inform the Obstetrician about high risk patients and those with fetal heart rate/CTG abnormalities. The paediatrician must also be informed of the fetal status prior to delivery.

Shave and Enema

• At the onset of labour pubic shave is **not** required.

• An enema is **not** given unless the patient requests one. (Fleet enemas to be used).

Nutrition in labour

Prior to Induction of labour a light meal can be given to patients. Once a patient is in established labour she should only be given free clear fluids orally. High risk patients should be NPO and their hydration maintained by intravenous fluids. All such patients should receive “aspiration prophylaxis” with Zantac 50 mg and Maxolon 10 mg orally or intravenously.

Activity / Position in labour

Patients should be encouraged to sit up or ambulate during labour provided there are no contraindications. If sedation has been given the patient should stay in bed with bed rails in place. When patients are in bed avoid supine position and encourage left lateral position.

Administration of analgesia and anaesthesia during labour and delivery

• Any Analgesia given must be done with the consent (verbally) of the patient. Written consent must be obtained for epidural or general anaesthetic.

• A mother who chooses natural childbirth and wishes to use relaxation methods for pain relief should be encouraged and assisted to do so. However, should pain relief by use of drugs be requested it should not be denied.
• An assessment of cervical dilation and progress of contraction including status of foetus must be done immediately prior to the administration of drugs such as Pethidine, or an Epidural. Generally, in normally progressing labours, Pethidine is not used after 7 centimetres dilatation. However, the degree of discomfort or pain being felt should be taken into consideration and each case dealt with according to discretion and good judgement.

• Naloxone (Narcan) must be available both in adult and neonatal dosage in the event that it is needed to reverse respiratory depression in the neonate at birth.

• Pethidine (100 - 200 mg) and an antiemetic may be administered by Midwives without a Doctor's prescription. However, rules of the Dangerous Drug Law must be observed.

• Midwives must not administer any form of analgesia unless she has been trained in its use, action and side-effects.

• Use of epidural analgesia is offered as "a limited availability" service. When used, the Anaesthetist is responsible to explain the procedure and its effects to the patient. Written consent is obtained (and witnessed). Strict aseptic technique must be observed during setting up 'the epidural'. All drugs/solution used must be checked by the attending physician and Midwife to avoid drug errors.

• Entonox apparatus must be checked regularly (six months).

After the delivery

Mothers wishing to breast feed may put infant to breast as soon as the infant has attained a satisfactory Apgar score and is at low risk of neonatal complications.

Cord blood is saved from all deliveries for Group and Rh testing (purple top). In case of Rh Negative mothers or patients with no antenatal care two tubes of cord blood should be sent to the laboratory for serology testing and Group and Rh testing.

Placenta and membranes must be inspected by the attending midwife or private practitioner. When there is suspicion of retained products this must be made known to the Obstetrician and recorded in the case notes.
MANAGEMENT OF LABOUR

The onset of labour is diagnosed when there are regular painful uterine contractions and evidence of progressive cervical effacement or dilatation. A partogram should be started when the cervix is at least 3 cm dilated.

1. FIRST STAGE OF LABOUR

Monitoring in labour

- All patients admitted in labour ward must have an initial 20 minute CTG.

- In low-risk cases, intermittent auscultation of fetal heart is acceptable provided the admission CTG is found to be satisfactory. Auscultation must be done for one minute during and after a uterine contraction and should be repeated at least every 30 minutes. If any fetal heart rate abnormality is detected on auscultation the patient should be monitored with continuous CTG.

- All High Risk Cases should have continuous CTG once in established labour.

High risk cases:

- < 37 weeks gestation
- Inductions and Augmentation of Labour
- Poor obstetric history
- Meconium liquor
- Known and suspected IUGR
- APH
- Twins
- Breech presentation
- Pre eclampsia
- Diabetes
- Trial of labour and VBAC

Where an unsatisfactory external CTG tracing is obtained, an FSE should be applied. If the membranes are not ruptured, consideration will need to be given to an ARM.
**Assessment of Labour**

Vaginal examinations. Progress in labour should be assessed by regular vaginal examinations when indicated to enable timely intervention. Examinations should be made every 2-4 hourly as indicated by the Studd line.

Please use the V.E. stamp. Where relevant all observations of the V.E. should be recorded on the partogram including descent of the head.

**Poor progress of Labour- Syntocinon Augmentation Regimen**

Should the progress of labour be more than 2 hours behind (ie to the right of the Studd line), the further management of the mother’s labour may need augmentation.

- **Primips** - 10 units of Syntocinon in 500 mls of Dextrose / Saline.
- **Multips** - 5 units of Syntocinon in 500 mls of Dextrose / Saline.

Start the infusion at 30 mls per hour and increase by 30 mls every 20 minutes until strong uterine contractions are occurring every 2-3 minutes up to a maximum infusion rate of 120 mls per hour.

**NB:** Syntocinon is not usually given unless membranes are ruptured.

**Rupturing of the Membranes**

Membranes should not be ruptured as a matter of routine. If there is progress in labour and there is no other indication to rupture the membranes, they should be left intact.

Conditions for the midwife to perform an ARM:

- Cervix at least 2 cm dilated - multips.
- Cervix at least 3 cms dilated - primips
- Term pregnancy with vertex presenting - 37-42 weeks
- Fetal head 2/5 palpable per abdomen or less

Remember: if meconium is found in liquor, monitor continuously. A paediatrician must be informed close to delivery.
2. **The Second Stage of Labour**

- **Pushing:** After diagnosis of full dilatation, if the mother has an effective epidural in situ one may wait two hours in primips and one hour in multips for descent of the head before commencing pushing, providing there are no fetal or maternal problems. Effective analgesia should be continued in second stage. If there is no descent of presenting part despite of pushing for one hour reassess patient and consider Syntocinon.

- Both multigravid and primigravid women may be allowed to push for one hour only, providing there are no fetal or maternal problems. If there is no descent of fetal head after one hour of pushing, reassess situation.

- **Syntocinon** may not be commenced in multiparae in the second stage unless there is a proper assessment to exclude CPD.

- **Episiotomy** may be performed for failure to progress, delay in second stage, fetal distress or threatened severe perineal laceration, instrumental deliveries. Local analgesia according to standing orders should be used for perineal infiltration. The procedure must be explained to the mother. There is no justification for “routine” episiotomies in primipara and every effort should be made to keep the perineum intact during all deliveries.

- “**Trial of forceps**” and most rotational forceps must be carried out in theatre with anaesthetist, paediatrician and a midwife present.

- There should be a trained assistant to assist at C.S.

- Estimation of blood loss must be done by the person who performed the delivery and recorded in the mother’s records.

- A paediatrician must be present at all instrumental deliveries.

- At delivery, suck out mouth of baby and oro-pharynx. Do not stimulate larynx too much.

- In presence of meconium, hold chest with both hands and prevent inhalation of meconium.

- Mothers are encouraged to sit up with knees flexed for delivery. However, at the mother’s request, other positions may be used (i.e. squat, Left lateral) with the discretion of the Obstetrician / Midwife. Lithotomy position with use of stirups is not usually used for normal deliveries, but may be needed in some cases (slow second stage) and also for breech, forceps and for suturing of episiotomies.
3. The Third Stage of Labour

Prophylactic use of oxytocic drugs is strongly recommended.

Oxytocic Drugs
1. One ampoule of Syntometrine (1ml) is given IM with the delivery of the anterior shoulder.
2. Contra-indications to the use of Syntometrine are hypertension (diastolic 100 mm Hg), asthma, cardiac disease.
3. If Syntometrine is contra-indicated, 10 units of Syntocinon should be given i.v. / i.m.
4. If a Syntocinon infusion is running it should be continued for at least one (1) hour after delivery. Syntometrine 1ml should still be given with the delivery of the anterior shoulder.
5. Oxytocic drugs (Syntometrine 1 ml i.m. followed by i.v. infusion of 20 iu of Syntocinon in 500 mls of Hartmanns or Dextrose/Saline over 4 hours) are essential in the following instances:
   • Grand Multipara
   • Previous PPH
   • Polyhydramnios
   • Multiple pregnancy
   • Prolonged labour
   • Fibroid uterus
   • Maternal pyrexia (>38.5 \(^\circ\) C)
   • Bleeding disorders

Removal of Placenta
After the oxytocic drug is given, controlled cord traction should be used to deliver the placenta once signs of separation are present. If the placenta is undelivered after 30 mins following delivery of the baby, ensure that the bladder is empty and inform the obstetrician.(see guidelines for Retained Placenta).

Retained placenta
Any mother with a history of retained placenta, should have an IV infusion in progress during labour. Blood should be taken and sent to the lab for group and cross matching.
When it is apparent that the placenta is retained (30 minutes after delivery of baby and bladder emptied):

1. The obstetrician must be informed.
2. IV line to be inserted and blood taken for cross-matching of 2 units of blood (if not done already).
3. Maintain fluid volume as indicated by blood loss.
4. Monitor vital signs and institute emergency measures as indicated.
5. Nursing supervisor to be informed.
6. Inform Anaesthetist and theatre staff as per obstetrician’s instructions.

**Episiotomy repair**

Episiotomies are to be sutured by the attending doctor or midwife (if she is trained in the procedure). The hospital Obstetrician may request that the Casualty Officer does the suturing during hours of midnight to 6 am. Small labial or perineal tears which are not actively bleeding do not need to be repaired. Third degree tears must be repaired by the obstetrician.

**MANAGEMENT OF POST PARTUM HAEMORRHAGE**

**Immediate action**

1. Get another person to call for medical aid.
2. Rub up uterine contraction.
3. Give Syntometrine 1ml IM stat.
4. Start intravenous infusion using 14G needle & cannula in the antecubital vein with 20 iu Syntocinon in 500ml of Hartmans or N.Saline at 120 mls per hour.
5. Start another IV line with Haemaccel/Gelofusin until blood arrives and run the first litre as fast as you can.
6. Take 20ml venous blood at the same time for FBC, Group and Cross match.
7. Attempt to deliver the placenta (if not already delivered).
Administration
1. Contact the duty obstetrician.
2. Contact the blood bank / on call Laboratory technician. Send at least 20 mls of blood for further cross-matching. Ask for 2-6 units of cross-matched blood, depending on the loss.
3. Inform theatre and anaesthetist if necessary.
4. Prepare for theatre as appropriate.
5. One midwife should be assigned to record keeping and should record the following (monitor vital signs with Dinamap [on the arm without IV line], every 15 min):
   - pulse & blood pressure
   - hourly urine output using a catheter (in-dwelling)
   - amount and type of fluids the patient has received
   - dose and type of drugs the patient has received

Clinical
1. Put in two large bore (preferably 14 gauge) intravenous cannulae.
2. Give the following fluids:
   (a) up to two litres of Hartmann’s solution
   (b) Haemaccel or Gelofusin, up to 1.5 litres
   (c) uncrossed-matched blood, Rh negative, the patient’s group
   (d) cross-matched blood as soon as available
3. Stop the bleeding
   - If the bleeding is from the placental bed of an intact uterus:
     a) commence bimanual compression of the uterus
     b) give 1 ml of Syntometrine intravenously and set up an infusion of 20 units of Syntocinon in 500ml of Hartmann’s at 120mls per minute
   - If the bleeding is from damage to the genital tract, direct pressure should be applied to the bleeding point until it is repaired under appropriate analgesia/anaesthesia.
4. If bleeding persists, the following procedures should be considered:
FLOW DIAGRAM OF MANAGEMENT OF PRIMARY PPH

Before Delivery of Placenta

Rub up a Contraction

Give 1m Syntometrine 1ml
IM / IV Syntocinon 5u

Delivery of placenta and membranes Complete/Incomplete

Delivery of placenta & membranes complete

Control of bleeding

Attempt delivery of Placenta by CCT

CCT Fails

Catheterize Bladder

Attempt CCT again

Bleeding continues

Massage uterus to stimulate contractions & expel clots

Give ergometrine iv/im

Call medical aid
DO NOT LEAVE MOTHER

Commence Syntocinon 20 units in 500 mls Hartmann’s

Observe for shock, check pulse & BP; give Oxygen as required

Perform external bimanual compression

Prepare for manual removal of placenta

To theatre Internal bimanual compression

Under Epidural in Delivery Room

Under G.A./spinal in theatre

Control of bleeding

Delivery of placenta

Hartmann’s

IVI site- bloods taken for cross-match and clotting screen
MANAGEMENT OF PATIENTS WITH PREVIOUS PPH

Establish an IV line when patient comes in labour. Blood should be taken for Group and Save. Maintain patency with slow infusion of Hartmann’s or Dextrose/Saline 500ml.

Third stage of labour should be actively managed with Syntometrine. Keep ready 20 units Syntocinon in 500ml Hartmann’s or Dextrose/Saline and after delivery infuse at 120 mls/hour.

Check for uterine atony frequently.

MANAGEMENT OF ANTE-PARTUM HAEMORRHAGE

All women who have reached 24 or more weeks gestation and are bleeding must be admitted straight to Labour Ward for assessment and subsequent management.

1. Do not perform a vaginal examination.
2. Inform the Obstetrician on call.
3. Insert large bore IV cannula and blood to be taken for cross-matching and clotting studies. Check Rh status for Anti-D administration if Rh negative.
5. Monitor maternal vital signs and assess amount of blood loss. Check for placental site in 18 week scan report. Check for tender hard uterus by palpation.
6. Speculum examination by the Obstetrician only.
7. Portable Ultrasound Scan to check / recheck placenta and fetal status.

MANAGEMENT OF MULTIPLE PREGNANCY

1. Obstetrician, Paediatrician and Anaesthetist must be informed of admission.
2. The method of delivery should be apparent from the ante natal notes. If no decision has been made this should be discussed with the Obstetrician.
3. Epidural is the optimum choice of analgesia.
4. All women should have an IV cannula and be cross matched for two units of blood.
5. Syntocinon augmentation of labour should only be used after discussion with the Obstetrician.
6. The Obstetrician, Paediatrician, Anaesthetist on duty must be present for delivery on Labour Ward.
7. Attempt to monitor both twins by CTG once in established labour.
8. Theatre should be informed.

9. Where both twins are cephalic presentation, the midwife may deliver the twins.

10. When Twin I is born, check the lie of Twin II and correct if necessary. One assistant should maintain a longitudinal lie pressing each hand on the lateral side of the abdomen. Start a Syntocinon IV infusion or increase the rate if one is already in progress. If the amniotic sac of Twin II does not rupture within 10 mins, perform a controlled ARM. This should be done by an experienced accoucher, ideally after the presenting part has descended into the pelvis to minimize the risk of cord or arm prolapse. Aim to deliver Twin II within 15-20 mins of Twin I.

11. Syntometrine is given with delivery of Twin II (i.e. not given with Twin I delivery).

12. The umbilical cords for multiple pregnancies should be clearly marked with one umbilical clamp for the first baby, two for the second, etc, and the placenta sent for histopathology as required.

13. Cord pHs if available must be done and recorded in the babies’ notes.

14. An IV infusion of Syntocinon (20 units in 500ml of Hartmann’s or Dextrose/Saline) is to be kept running post delivery for 4 hours (120mls / hour).

15. Keep bladder empty.

MANAGEMENT OF VAGINAL BREECH DELIVERY

- Careful selection for vaginal delivery documented by Obstetrician antenatally considering:
  * Weight of baby clinically or by ultrasound
  * Clinical assessment of pelvis or pelvimetry
  * Type of breech and attitude of fetal head
  * Any other obstetric/medical complication

- Obstetrician, paediatrician and anaesthetist must be informed of the admission.

- Epidural is the choice of analgesia.

- Syntocinon augmentation of labour may only be used after discussion with the obstetrician.

- Obstetrician & paediatrician must be present at delivery.

- Blood should be taken for group and save and sent to the Lab.

- Pushing allowed only when the breech is on the perineum and full dilatation confirmed.
MANAGEMENT OF LABOUR AFTER PREVIOUS CAESAREAN SECTION

‘Trial of Scar’ should be replaced by attempt at Vaginal Birth After Caesarean (VBAC).

- Notify Obstetrician of admission. Inform Theatre staff, Anaesthetist and Paediatrician of the attempted VBAC.
- The guideline for the management of the mother’s labour should be apparent from the antenatal notes.
- The patient should be prepared as for elective caeserean section.
- An IV cannula should be sited and blood sent for FBC & Group and Save.
- Continuous CTG fetal monitoring must take place.
- Epidural analgesia may be offered.
- Syntocinon augmentation or induction of labour is not contra-indicated but must only be instituted on the Obstetrician’s instructions.
- Two-four hourly vaginal examinations as indicated by Studd line.
- The Obstetrician must reassess the progress when cervical dilatation is two (2) hours behind the “Studd” line or if any of the following occur: Scar tenderness/pain, fetal heart abnormalities, or blood stained urine.
- Aim to deliver within 12 hours once established labour has been diagnosed.

TRIAL OF LABOUR

Strictly speaking, every labour is a trial. Therefore ‘Trial of Labour’ is generally not a satisfactory description, or terminology.

A non-engaged head at term in a primigravid patient is not rare. Good uterine contractions augmented with syntocinon when needed, together with effective analgesia is the method of management (unless there is obvious cephalo-pelvic disproportion as a result of a rare pathology). CPD is a diagnosis usually made after an augmented labour in a primigravid woman who had effective analgesia and strong uterine contractions for at least 4 hours, has failed to progress.
PRE-TERM LABOUR (34-37 Weeks Gestation)

- Inform obstetrician and paediatrician of admission.
- An immediate cardio tocograph should be done.
- Assess:
  - Accurate gestational age estimation
  - Frequency, strength and duration of uterine contractions
  - Cervical dilatation
  - Status of membranes
  - Fetal presentation
- Send FBC, MSU, HVS and Cervical Swab for Culture & Sensitivity.
- In the majority of cases there is little to gain by stopping labour or by giving steroids and therefore labour should be allowed to progress normally.
- The baby must be dried quickly, wrapped, and warmed using overhead heater if necessary. The room temperature should be at least 26 degrees C.
- Further management of baby will be decided by paediatrician.

PRE-TERM LABOUR (before 34 Weeks Gestation)

- Inform Obstetrician and Paediatrician of admission.
- Continuous CTG.
- Obstetrician must assess gestational age accurately and estimated fetal weight if possible.
- Check the following parameters:
  - Frequency, strength and duration of uterine contractions
  - Cervical dilatation
  - Status of membranes
  - Fetal presentation
- Send FBC, MSU, HVS and Cervical Swab for Culture & Sensitivity.
- Discuss with Paediatrician in case transfer to Miami is necessary (especially if <28 weeks).
Steroid therapy

- Steroids to hasten lung maturity should be given between 24 and 34 weeks gestation.
- **Dosage:** Two doses of Betamethasone 12 mg given im 24 hours apart OR four doses of Dexamethasone 6 mg given i.m. 12 hours apart.
- Steroid therapy does not need to be repeated if the patient is undelivered beyond 7 days of completion of therapy.
- Note that steroids may cause fetal heart changes (decreased variability and rate and in some cases mild decelerations)

Tocolytic therapy

- Salbutamol is the drug of choice. Dose is 10 mgs in 500mls of Normal Saline. Start at 25 mls/hour and increasing by 25 mls/hour every 10 minutes until contractions cease, the maternal pulse exceeds 120/min or the infusion rate reaches 100 mls/hour maximum.
- Should not exceed 24 hours if given I.V. Must be given through ivac pump.
- Ensure serum electrolytes are done daily.
- Contra-indications to salbutamol: diabetes, cardiac disease, APH & sodium abnormalities.
- Observations to be recorded when using tocolytics: Maternal pulse, blood pressure, respiration & Continuous CTG.
- Note that Salbutamol may cause an increase in the maternal WCC.

SPONTANEOUS PREMATURE RUPTURE OF MEMBRANES  (before 34 weeks & not in Labour)

- Inform consultant obstetrician, paediatrician of admission.
- Perform an immediate CTG (30 minutes).
- Perform a sterile speculum examination to confirm SRM. Send an HVS to Lab.
- Give Dexamethasone/Betamethasone even in presence of PET.
- Discuss an in-utero transfer with consultant paediatrician if < 28 weeks.
- Tocolytic should be used during in-utero transfer provided there are no contra-indications.
- Prematurity is a greater problem than risk of infection and in the absence of any evidence of infection management should be conservative. Conservative management: Check Temp 6 hourly, FBC twice weekly, CTG twice weekly.
• Once infection is suspected labour should be induced by appropriate method.

PROLONGED SROM (at Term)

Where, in a pregnancy at term there has been prolonged SROM (longer than 24 hours):
• An HVS should be taken prior to augmentation of labour.
• A paediatrician should be informed.
• Swabs from the baby’s ‘deep ear’ and axilla should be sent for Culture & Sensitivity. Antibiotic commenced as per protocol.
• Further treatment to be decided by paediatrician.

Pre-Term Labour Section (pages 29-31) revised August 2000.

PYREXIA IN LABOUR

• The paediatrician should be informed of pending delivery.
• A ‘deep ear’ swab should be taken from baby and sent to Lab.
• Gastric aspirate from baby should be taken and sent to histology
• Maternal Blood cultures, HVS and MSU are to be taken and sent to the laboratory urgently for Microscopy, Culture and Sensitivity

INDUCTION OF LABOUR

Administration policy

Patients for IOL must be booked and entered in Induction Book on the Labour ward. Avoid elective/routine IOL on weekends. IOL cases should be spaced so that not more than ONE case is induced per day.

If necessary maximum of TWO cases may be booked after consultation with senior midwife. It must be noted that non-urgent IOL cases may have to be postponed if labour ward is busy and patients should be informed of this. When more than one case is booked for IOL, the Government Consultant Obstetrician will decide on which patient should have priority.

The indication for Induction must be recorded in the patient’s notes.

Prostaglandin Vaginal Gel (PROSTIN)
• Prostin (Prostaglandin E2) gel should be used in the first instance with an unripe cervix (less than 3 cms dilated and a Bishops score of less than 5).

• Prostin Gel is given high in posterior vaginal fornix and not in cervical canal.

• Gel may be inserted on the Antenatal ward after a normal CTG.

• Fetal Monitoring - women should be monitored externally for at least 20 minutes prior and 1 hour after insertion of gel. The woman may ambulate after 1 hour of insertion of gel.

• Timing of gel in Primigravida - first gel 2 mg inserted at 11 pm. Omit night gel if cervix is 2-3 cms dilated. Max dose for primip is 4 mg in 24 hours. Second gel 1-2 mg at 6-7 a.m. if patient is not having regular contractions and cervix is less than 3 cm dilated.

• Timing of gel in Multiparas - first gel 1 mg at 7 a.m. and if subsequent applications are needed 1 mg at 4 hourly intervals up to a maximum of 3 doses (Max=3 mg in 24 hours).

• The gel must be prescribed and the Bishops score written at the time of administration.

• Use of Prostaglandin gel is contra-indicated in patients with known hypersensitivity to prostaglandins, in CPD and grande multiparity. It should be used with caution in cases with asthma and previous caesarean section (IV line necessary for both).

• Prostaglandin must be given on Labour Ward in the following instances: IUGR, Twins.

• Uterine hypertonus with prostin gel is characterized by a hard uterus with the patient complaining of continuous abdominal pain. Fetal bradycardia ensues rapidly.

  **Immediate Action:**
  
  * Place woman on left lateral position
  * Give Oxygen via face mask (5 lit/min)
  * Call Obstetrician and anaesthetist
  * Terbutaline 0.25 mg subcutaneously or 2 puffs of salbutamol inhaler
  * Swab out residual gel from vagina
  * Prepare for emergency Caesarean Section.

**Artificial Rupture of Membranes**

Once the obstetrician has decided to induce labour, an amniotomy to induce labour may be performed by midwives according to the guidelines for ARM by midwives. In general, amniotomy will be followed by i.v. oxytocin infusion. However, Syntocinon is best avoided within four hours of Prostin administration.
**Syntocinon Infusion Regimen**

Use 500 mls. Dextrose / Saline.

- **Primigravida**: 10 units in 500 mls
- **Multigravida**: 5 units in 500 mls

After delivery the Syntocinon infusion should be discontinued after one hour (except in cases of high risk for PPH where an infusion of 20 u. Syntocinon in 500 mls over 4 hours is used).

**INVERTED UTERUS**

The aim of Controlled Cord Traction is to prevent the fundus of the uterus from ‘following’ the placenta into the vagina. This rare complication is invariably due to attempts made to deliver the placenta when the uterus is not contracted and before there are signs of placental separation. Occasionally inversion is associated with a morbid adherence of placenta or a very short cord.

1. Call Obstetrician and Anaesthetist urgently.
2. Give analgesia Pethidine 75 mg im. Do not attempt to remove the placenta and try to replace the uterus. Uterine relaxants such as 2-4 puffs of salbutamol inhaler or Terbutaline injection 0.25 subcutaneously are helpful.
3. Establish two IV lines, blood to be taken and 4 units of blood should be cross-matched.
4. Prepare for theatre.

**MATERNAL COLLAPSE FOLLOWING DELIVERY OF INFANT**

1. Call medical aid urgently -eg Obstetrician and Anaesthetist.
2. IV access - two lines
3. Place in recovery position.
4. If placenta has not been delivered, this should be done.
5. Identify reason for collapse - if not obstetric, call the medical doctor on duty.
6. Have the emergency trolley ready.
FETAL DISTRESS

The features of normal CTG are same for antenatal tracing and include:
- baseline rate of 110-160 beats per min.
- variability greater than 5 beats per min
- some accelerations
- no decelerations.

Abnormal CTG - ie persistent loss of contact, loss of beat to beat variability and early or late decelerations, tachycardia, bradycardia.
- Change position to left lateral.
- Consider applying FSE, if not already in situ & quality of external tracing in doubt.
- Administer Oxygen.
- Stop Syntocinon infusion.
- Perform a VE to assess stage of labour and exclude cord prolapse.
- Notify the midwife in charge of Labour Ward and the obstetrician.
- Record in mother’s notes: observations, action taken by midwife and instructions given.
- Prepare for fetal scalp pH sampling or assisted delivery.

**Scalp pH:**
- Normal - above 7.25
- Abnormal - below 7.25
- Severe Hypoxia - less than 7.15

Cord pH should be performed in all cases of fetal distress.

**Low Cord pH**
- $<7.10$ - Do capillary pH from baby
- 7.10-7.20- Paediatrician to assess baby and decide

SHOULDER DYSTOCIA
• Risk Factors: Fetal macrosomia, diabetes, previous history of shoulder dystocia prolonged labour.

• If vaginal delivery is planned in high risk cases, the notes should be be clearly flagged with “beware shoulder dystocia:. In such cases obstetrician to be present at delivery

• Keep ready:- Foley’s and metal urinary catheters, scalpel blade and handle, 2% lignocaine vials in case a symphysiotomy is required.

H – call for help

Help should be summoned immediately, since a delay in delivery is associated with adverse fetal outcome. The turtle sign (when the fetal cheeks and chin are pulled tightly against the perineum) may forewarn the attendant. A senior obstetrician, midwife, paediatrician and anaesthetist should be called. The obstetrician should then direct the activities of the personnel in the room. At this stage, lateral neck traction and maternal pushing should be discontinued and alternative manoeuvres invoked.

E - episiotomy

Although shoulder dystocia is a ‘bony’ problem, rather than a soft tissue obstruction, an episiotomy may create more space. This procedure increases the chances of delivering the anterior should under the symphysis. Moreover, it provides greater access to the pelvis if additional manoeuvres are required and it protects the pelvic floor.

L – legs

Correct positioning of the patient is crucial and the McRoberts manoeuvre is advocated. In this position, the maternal hips are abducted, flexed and rotated outwards. Two assistants are required to maintain the position, which straightens the lumbosacral angle and rotates the symphysis superiorly. Recent experience has confirmed the safety and efficacy of this manoeuvre in the management of mild to moderate shoulder dystocia. Once the legs are in the correct position, maternal pushing and appropriate lateral neck traction can be restarted.

Use of the left lateral position has been widely advocated but, unless the shoulder dystocia is mild, the chances of success are small. Squatting has the same effect on the pelvis as the McRoberts manoeuvre but the few obstetricians are experienced in delivering women in this position. The ‘all fours’ position is helpful but is difficult to achieve, especially for an obese woman or a woman with an epidural. Squatting and getting on ‘all fours’ may have a role for a mobile patient, or at home, but in a hospital setting the McRoberts position is advocated.

P – pressure

Lateral suprapubic pressure should be applied with the flat of an assistant’s hands behind the anterior shoulder. The aim is to push the fetal shoulder into the oblique diameter and to dislodge the shoulder from the symphysis. In addition, this manoeuvre adducts the shoulders and reduces the bisacromial diameter. The assistant may need to stand on a platform on the same side as the fetal spine to achieve this. Initially, the pressure should be continuous but if delivery is not accomplished after 30 seconds a rocking motion should be used.
E – enter the pelvis

The baby will be delivered in 90% of cases using the simple measures described above. If not, maternal pushing and neck traction should be discontinued and internal rotation of the shoulders attempted. This involves inserting the hand into the posterior aspect of the vagina and moving it up to the posterior aspect of the anterior shoulder. The anterior shoulder is then pushed from behind into the oblique position.

If this fails the operator should attempt to rotate the posterior shoulder through 180 degrees. This is achieved by pushing firmly on the posterior aspect of the posterior shoulder. Once the shoulder has rotated through 90 degrees it will be necessary to change hands in order to rotate the shoulders through a total 180 degrees. This corkscrew manoeuvre disimpacts the shoulders from the pelvic inlet. At times it may be necessary to push the posterior shoulder back up into the pelvis slightly in order to accomplish the manoeuvre. After each attempt at rotation, gentle neck traction and maternal pushing are recommenced.

R – removal of the posterior arm

If rotational manoeuvres fail to free the impacted shoulders, delivery of the posterior arm is often effective. The operator’s right hand is inserted if the baby is facing the mother’s left or the left hand if facing to the right. The hand must be inserted into the posterior aspect of the vagina, as this is the only space available for it. The baby’s posterior arm is flexed at the shoulder and elbow in an attempt to retrieve the hand or forearm. The forearm or hand is swept across the chest and face allowing the posterior arm to deliver. The anterior shoulder usually follows. The procedure may fracture the clavicle or humerus but these injuries usually heal well without long-term complications.

Pressure on the baby’s clavicle.

Should the above fail, firm digital pressure on the anterior aspect of the baby’s clavicle should be exerted with the aim of fracturing the clavicle after which delivery by traction on the head is usually easy.

Symphysiotomy

Should the above fail Symphysiotomy should be considered. Few obstetricians have experience of this procedure which may lead to uncontrolled separation of the symphysis resulting in damage to the lower urinary tract and the pelvic joints. For this reason it is important that two assistants are supporting the mother’s legs if this is to be performed.

Cephalic replacement

Cephalic replacement is not part of the routine management of shoulder dystocia, although a number of successes have been reported. It involves application of constant, firm pressure with the palm of the hand, in order to flex the fetal head and return it to the pelvis. Delivery of the baby is completed by caesarean section. The maternal risks need to be carefully considered against the chances of a successful fetal outcome.

Inappropriate manoeuvres

It is vital that time is not wasted on a protracted attempt with a single manoeuvre or other inappropriate management. Overzealous neck traction and prolonged maternal pushing are
unhelpful as they further impact the anterior shoulder against the symphysis. Excessive neck traction is the most common cause of brachial plexus injury, in particular Erb’s palsy (C5, C6, C7). Fundal pressure may be useful only where maternal pushing efforts are inadequate (e.g. dense epidural block).

MANAGEMENT OF HYPERTENSION IN PREGNANCY

1. Urgent control of hypertension

Blood pressure should be promptly reduced in any antepartum or postpartum (first 5 days) patient in any of the following circumstances:

- Systolic BP of 170 mm Hg or more for 10 minutes.
- Diastolic BP of 110 mm Hg or more for 10 minutes.
- Lesser hypertension in the presence of symptoms regarded as due to hypertension.
- Treat at lower levels (eg. 160/105) if the woman normally has very low BP at booking (eg. 90/60).

In these circumstances, give Hydralazine 10 mg I.m. or i.v. This dose may be repeated after 20-30 mins if necessary.

If URGENT control of hypertension is required on TWO occasions, maintenance hypotensive therapy should be commenced either by intravenous infusion or orally.

2. Maintenance control of hypertension in labour

In labour, maintenance therapy of hypertension is required in the following circumstances:

- As a sequel to urgent control of hypertension.
- A patient who is already taking maintenance hypotensive medication. The oral medication is continued but due to the unpredictable absorption of oral drugs in labour, parenteral therapy may be required if the blood pressure is not adequately controlled.

Whilst Epidural analgesia may contribute to lowering of blood pressure it should not be used as a primary therapy for hypertension. For control of severe hypertension in labour, parenteral therapy is indicated in the form of continuous infusion or bolus therapy.

Intravenous hydralazine infusion: Hydralazine 50 mg in 50 ml 5% Dextrose solution. Commence at 24 mls / hour for 10 mins then 12 mls / hour for 10 mins followed by 6 ml / hour. The rate of the infusion may need to be titrated against the blood pressure response; it should be appreciated that the response to a change in the infusion rate will not be immediate and, if urgent reduction of BP is required, a bolus of the drug should be given.
In some patients, central venous pressure monitoring or intra-arterial blood pressure manometry may be necessary. Indwelling urinary catheter is not routine, but may be inserted when there is oliguria, where delivery is planned, or when there is a need to know hourly urine output. Intravenous access must be maintained whilst the situation is unstable.

3. Maintenance control of hypertension outside labour

The first step is admission for bed rest, which may be associated with resolution of many cases of mild hypertension. Ongoing control of hypertension is required in the following circumstances in any antenatal or postnatal patient:

* As a sequel to urgent control of hypertension
* Systolic BP of 160 mmHg or more on at least two occasions, separated by 4 hours or more
* Diastolic BP of 100 mmHg or more on at least two occasions, separated by 4 hours or more
* Lesser degrees of hypertension where there is a medical condition requiring more stringent control of BP

In these circumstances, one of the following medications should be used:

- **Oral Labetalol**: commence with 100 mg tds and increase stepwise as necessary to maintain blood pressure below the above levels, to a maximum of 400 mgs qid.
- **Oral Methyldopa**: commence with 250 mg tds and increase stepwise as above, to a maximum of 1 gm qid.

**Refractory Hypertension**: In cases of refractory hypertension, oral hydralazine may be added to either of the above medications, increasing to a maximum dose of 200 mg daily.

**Remember**: Increasing hypertension in a pre-eclamptic antenatal patient may be an indication for delivery (rather than for hypotensives alone).

**MANAGEMENT OF PRE-ECLAMPSIA / HELLP SYNDROME**

Hellp is an acronym applied to a variety of severe pre-eclampsia which includes Haemolysis, Elevated Liver Enzymes and Low Platelets. The criteria for the diagnosis are as follows:

- **Haemolysis**: a fall in haemoglobin by at least 2 gm/dl accompanied by haemoglobinuria, reticulocyte count above 3% or absent haptoglobin in serum.
- **Elevated Liver Enzymes.** This implies an elevation in the ALT and/or bilirubin level. The bilirubin should be above 25, and the ALT above 60.
- **Low Platelets.** The platelet count should be less than 100,000.
The management of this subset of patients with severe PET is the same as indicated below, with special attention to correction of anaemia and clotting disturbances.

1. Management of severe pre-eclampsia

- Admit patient to ‘Special Care Room’ (usually delivery suite).
- Notify Obstetrician, Anaesthetist, Paediatrician and Laboratory personnel.
- Draw blood for FBC and Platelets, Uric acid, Urea Creatinine and Electrolyres, Coagulation profile and Fibrin Degradation Products (FDP), Liver Function Tests, Group and Save.
- Catheterise and measure urine output on hourly basis
- Monitor BP every 15 mins with automated BP machine.
- Obsetrician to assess severity of condition on presentation and need for Antihypertensive Therapy and for Anti-convulsant Therapy.
- Anticonvulsant therapy is not routine and only given for specified indication.
- Control severe hypertension with urgent drugs followed by maintenance therapy.
- Fluid administration: In general, 80-100 mls/hr is appropriate. In certain cases, (e.g. vomiting, prolonged fasting, haemoconcentration), careful volume replacement with colloid infusion may be indicated. Diuretic therapy is used only for pulmonary oedema.

2. Indications for anticonvulsant therapy

**Eclampsia**: Immediate management of an eclamptic seizure is outlined below. All patients with eclampsia require immediate control of the seizure followed by prevention of further seizures for 24 hours.

a) **After eclampsia**: Many patients will be admitted after having had fits. If seen within 6 hrs of the event, or later if the clinical condition is still unstable, anticonvulsant cover should be given for 12-24 hrs.

b) **Severe pre-eclampsia**: Prevention of eclampsia is a major priority and is usually achieved by control of hypertension. No patient with PET is ever given an anticonvulsant drug alone. Control of hypertension is essential together with any anti-convulsant. Anticonvulsant therapy is reserved for a small minority of women with hypertension which has been inadequately controlled AND any of the following:
  - Altered mental state
  - Persistent headache, neckache
  - Persistent epigastric pain, vomiting
  - Sustained clonus

Duration: Anticonvulsant medication is used only in severe situations where delivery is imminent. It is not continued beyond 24 hrs without ongoing neurological instability.

**Neurological examination must be performed before anticonvulsant medication is given, except in an emergency such as eclampsia.**
3. Anticonvulsant therapy

- For Eclampsia seizure activity is treated acutely by IV Midazolam 2.5mg-5mg or IV Diazepam 5-10mg. (Midazolam is preferred for fewer fetal effects.)

- After Eclampsia seizure recurrence is prevented by magnesium sulphate, given as below:
  a) Open two 50ml ampoules of 50% magnesium sulphate.(25 grams in a 50ml ampoule.)
  b) Draw up 80ml of 50% (=40gm) of magnesium sulphate.
  c) Withdraw 80ml normal saline from a 500ml bag.
  d) Add the 80ml magnesium sulphate to the 420ml normal saline to create 40gm in 500ml.
  e) Give the first 50ml of this solution over exactly 20 minutes (ie. 150ml/ hour =4gm magnesium sulphate)
  f) After 50ml, decrease infusion rate to 12ml/ hour. (1gm Magnesium sulphate/hour)
  g) Review need for continuation every 6 hours. More than 24 hours treatment should not be necessary.
  h) If urine output is less than 30 mls/ hr, check magnesium level 6 hourly.

- If further Seizure give 4ml magnesium sulphate (=2gm) IV over 5 minutes. Obstetrician must be informed immediately.

Magnesium Toxicity

Magnesium toxicity is suggested by disappearance of the patellar reflex and respiratory depression (<12/minute). Cardiac arrest is a late phenomenon and indicative of severe toxicity. The patellar reflex should be tested 2 hourly whilst magnesium infusion is in progress. Disappearance of the patellar reflex mandates a Magnesium level and cessation of the infusion. IV administration of 10-20ml of 10% calcium gluconate will usually reverse respiratory depression and must be available at all times when Magnesium is in use.

Duration of Anticonvulsant Therapy

Anticonvulsants are given for 24 hours and longer only if there has been recurrent seizure activity.
4. Management of Eclampsia

- “Coma position.”
- Stop the fits - intravenous bolus Midazolam or Diazepam (see above).
- Control the hypertension (see above).
- Consider timing of and mode of delivery.
- Indwelling catheter, intravenous line, all tests.

5. Monitoring of Maternal and Fetal Wellbeing in Pre-Eclampsia

Maternal:

- Symptoms which indicate worsening disease are persistent headache, neckache, epigastric pain, vomiting, breathlessness, etc. Any woman with pre-eclampsia who complains of severe epigastric, low chest, right sided back pain or right hypochondrial pain should be regarded as severely ill unless proven otherwise. This pain is usually due to focal hepatic infarction and indicates very severe pre-eclampsia.
- Signs of uncontrolled hypertension, proteinuria, epigastric tenderness, oliguria, jaundice, and cardiac failure, indicate severe pre-eclampsia.

Laboratory tests are useful and the following should be checked weekly, more often if thought necessary: Uric acid, Creatinine, Heamoglobin, White cell count and platelets, Aspartate Transaminase (AST) and albumin, & Bilirubin.

Fetal:

Assessment of fetal wellbeing is essential. This is achieved by means of:
- Kick count kept by mother.
- Cardiotocography- at intervals to be determined by the obstetrician.
- Ultrasound for fetal growth, biophysical profile and if available, Doppler assessment of flow velocity waveforms.

6. Pre-Eclampsia and Epidurals

Coagulopathy is a contraindication to siting an epidural. Perform full blood picture and coagulation profile if need for epidural is anticipated, close to the time of request.

Epidural therapy is advantageous to these mothers as it:
  a) decreases catecholamine levels associated with pain of labour.
  b) lowers blood pressure in conjunction with medical therapy.
  c) avoids need for general anaesthesia for CS which is high risk in these patients.

Epidural analgesia alone cannot be relied upon to control hypertension.
THE MANAGEMENT OF INSULIN-REQUIRING DIABETES IN LABOUR

- The patient should receive her usual evening dose of short-acting insulin and 70% of long-acting insulin.
- Induction should be booked for early morning any normal working week day.
- Nil orally in labour.
- 0700 fasting blood glucose estimation.
- The patient should not be given her usual morning subcutaneous insulin.
- At the time of induction, commence intravenous dextrose 10% at the rate of 100 ml / hr.
- After surgical rupture of membranes, intravenous oxytocin in Hartmanns solution, rate as per usual regimen.

Insulin requirements

- Make Actrapid / soluble insulin solution 20 units in 20 mls normal saline in 20 ml syringe pump.
- If the fasting blood glucose measurement is less than 3 mmol / litre the patients should be given 50 mls of Dextrose 10% and no added insulin before the Dextrose / Insulin is commenced. Repeat Blood Sugar Level (BSL) in 30 mins.
- If 3-5 mmol / l, commence insulin at 0.5 ml (units) per hour. Repeat BSL in one hour.
- If 6-7 mmol / l, insulin at 1 ml / hour.
- If 8-10 mmol / l, insulin at 2 ml / hour.
- If the fasting blood sugar level is greater than 10 mmol / litre the patient may be given a statum intravenous infection of two units of Actrapid insulin, after consultation with the doctor in charge.
- Two hourly blood glucose measurements should be performed during labour. The sample should be taken from the hand without the glucose drip.
- The aim is to keep blood sugar levels during labour between 4 and 8 mmol / litre.
- The fetus should be monitored continuously (CTG) during labour.
- A paediatrician should be present at delivery. The baby will probably require observation in the Special Care Nursery.
POST PARTUM THERAPY GUIDELINES FOR THE DIABETIC

The diabetic state and insulin requirements change dramatically at the time of delivery. It is often difficult to predict what treatment should be given in the post partum period. The important principles are regular observation of blood sugar levels; and the careful use of insulin when indicated.

There are two broad categories of diabetics and their management will generally be as follows:

1. Insulin Dependent Diabetic

The insulin regimen before pregnancy will give some guide as to what the requirements will be post partum. The patient is usually being treated with intravenous dextrose (10% dextrose at 100 ml four hourly) and intravenous insulin (Actrapid) at the rate of 0.5-2 units/ hour through labour, delivery and the immediate post partum period.

Management:

A) Monitor dextrostix levels at least four times daily and notify doctor if blood sugar levels exceed 12mmol/l.

B) Resume subcutaneous insulin therapy at 2/3 pre-pregnant dose after removal of the intravenous insulin/ glucose drip.

   I. Long acting insulin e.g. Monotard insulin.
   II. Short acting insulin is usually added to this after the first twenty-four hours.

As soon as possible, the patient should be transferred to an effective twice daily insulin regimen to control blood sugar levels between 5 and 10 mmol/l. This will generally entail a doublemix of short and long acting insulins, e.g. Actrapid and Monotard, before the morning and evening meals.

2. Gestational Diabetic on Insulin Therapy

Most patients will revert to normoglycaemia immediately after delivery. These patients will be assessed according to their four point blood sugar profiles. Three of four blood sugar levels should be estimated in the first 24 hours post-partum. A full four-point sugar profile is performed on day 3 or 4. Rarely, blood sugars will persist above 8-10, indicating a continuing diabetic state requiring treatment.
PERI OPERATIVE GUIDELINES FOR THE DIABETIC PATIENT REQUIRING INSULIN

The patient should have her normal dose of short-acting insulin the evening prior to surgery, with 70% of the dose of long-acting insulin.

The patient should be first on the operating list.

A fasting Blood Sugar Level (BSL) should be assessed a 0700 hours.

The morning insulin dose is omitted.

At 0600 hours commence an i.v. infusion of 10% dextrose at 80 mls / hour.

At the same time make a solution of 50 units Actrapid insulin in 50 mls of saline. This is to be administered intravenously with a syringe pump via a “Y” connector into the IV dextrose line.

Check patients blood glucose with glucometer:

- If 6-9 mmol / l run infusion at 1 ml / hour (i.e. 1 unit / hour).
- If 10-15 mmol / l commence at 1.5 ml per hour (i.e. 1.5 units / hour).
- If > 15 mmol / l: insulin bolus 2 units, infusion 2 units / hour; check BSL in 1 hour.
- If > 20 mmol / l: call Anaesthetist or Obstetrician.

Check blood glucose hourly during surgery.

Continue two hourly blood glucose after surgery until stable.

Then check blood glucose every 4 hours until oral diet resumed.

As soon as possible the patient should be returned to an effective twice daily insulin regimen to control blood sugar levels at less than 10 mmol / l.
EPIDURAL ANALGESIA

Medical Indications

Epidural analgesia is the most effective method of pain relief in labour and should be discussed with the mother and encouraged on the grounds of fetal benefit:

- where repeat doses of pethidine have been required
- in the compromised fetus (e.g. pregnancy induced hypertension, IUGR) to improve uteroplacental blood flow
- in the premature, breech or multiple pregnancy fetus to control delivery

and on maternal grounds:

- in severe pre-eclampsia
- in those with cardiac, respiratory, neuromuscular and neurological disease.

Medical contra-indications

- local infection or septicaemia
- defective haemostasis
- uncorrected hypovoleamia
- if aseptic technique cannot be guaranteed. It may be necessary to first check platelet count, coagulation status and/or bleeding time in those with severe pre-eclampsia, abruption, bleeding disorders etc. and recent anticoagulant therapy.

Epidural management

Epidurals are sited for obstetric or medical reasons and on mother’s request, subject to availability of the anaesthetic staff.

Women vary considerably in their knowledge and understanding of epidurals and every opportunity should be taken to discuss methods of pain relief in labour before they become distressed or receive medication. This information should be both realistic and balanced. Booklets available are entitled “Epidurals for labour and delivery”. A member of the Anaesthetic Department could provide more detailed discussion.

Despite the acknowledged effectiveness of epidural pain relief, consumer surveys reveal that women may not always be satisfied. Sources of dissatisfaction include inadequate pain relief (especially in the delivery phase), prolonged labour and instrumental delivery.
Dense neural block in labour confers unwanted sequelae such as marked motor block (immobility, inability to walk or squat; urinary retention); hypotensive episodes; shivering; prolonged second stage with absent urge to push; and increased rate of instrumental delivery. The use of low-dose bupivacaine (<0.25%) & fentanyl combinations is to be recommended. Motor block is reduced and the majority of women are capable of weight-bearing; the urge to push is retained by 90%; hypotension, shivering and urinary catheterisation reduced; and possibly, instrumental delivery rates less. Adverse fetal and neonatal effects are not seen in the healthy, mature fetus at doses of less than 50 mcg per hour.

Some obstetricians and midwives believe in discontinuing epidural pain relief at full dilatation in the hope of improving the spontaneous delivery rate. There is no evidence to support this practice as a routine and it may be counter-productive; the only proven effect is an increase in pain. Women should be given the opportunity to continue pain relief in the second stage of labour but should be encouraged to use low-dose combination solutions if possible.

Midwives are the ideal staff to administer epidural solution because they are in constant communication with the mother, and, given a flexible approach to prescribed solutions, can help adjust bolus doses according to the woman’s needs or provide supplementary boluses to women using infusion or patient-controlled techniques.

**General Principles**

Epidural analgesia is available on a limited basis, depending on anaesthetic staff availability. The anaesthetist should be contacted by the obstetrician (especially if there are obstetric or medical complications) or the midwife. Midwives should have obtained the obstetrician’s consent and be prepared to provide an adequate history to the anaesthetist.

The first epidural dose must always be administered by an anaesthetist. The choice of epidural solution and delivery method is, (in consultation with the woman, obstetrician and midwife), the decision of the anaesthetist. In any case, where the position of the catheter is in doubt and after a dural tap, the anaesthetist must administer all bolus doses.

Top-up boluses may be given by a midwife provided clear instructions have been written on the epidural form and observations made by the midwife (as per Hospital protocol) must be recorded. It is safe practice to give all boluses incrementally, observing for signs of toxicity or spinal block - recommended bolus doses are 25 mg bupivacaine (5ml 0.5% or 10ml 0.125%) and 100 mg lignocaine (5ml 2% or 6ml 1.5%).

Epidural analgesia should be continued until delivery or the early puerperium unless, on discussion with the woman and obstetrician or anaesthetist, it is decided to withhold further solution.

Epidural infusions and Patient Controlled Epidural Analgesia (PCEA) may be used instead of intermittent boluses and offer advantages such as more uniform analgesia, less haemodynamic
disturbance, lower rates of drug use, reduced midwifery workload and greater maternal satisfaction. They are of particular value in the highly motivated woman who wishes to retain some control, high-risk medical patients, or those with severe pre-eclampsia.

Motor block may occasionally still be marked and the upper dermatomal level of spread should be checked intermittently. Blood pressure must be checked half-hourly and five-minutely after top-ups. Midwives should be familiar with the operation of both syringe and PCA pumps.

Women wishing to move about or weight-bear for delivery should:
- confirm leg strength by performing and maintaining a straight leg raise with both limbs
- sit upright to check for postural hypotension
- with assistance, attempt to bear weight next to the bed prior to walking

If a decision is made to assist delivery or perform perineal suturing, dense neural block should be obtained with concentrated local anaesthetic prior to intervention.

At the obstetrician’s request, continuous fetal heart rate monitoring may be used. Additional maternal monitoring (eg. pulse oximetry, arterial blood pressure and central venous pressure) may be indicated in certain situations on the request of the obstetrician or anaesthetist.

Care of bladder function is an important part of epidural management since urinary retention may occur. both during labour and for a period of time into the early puerperium (until the effect of the epidural has waned and the woman has passed urine) the bladder should be checked for over-distension and catheterisation may be required.

**Epidural Regimens**

1. **Intermittent Boluses**

A. 0.125% bupivacaine with fentanyl 50mcg (10ml)

Effective in 80-90% of women as an initial dose and can be repeated hourly throughout labour with no clinically adverse neonatal effect. Less effective in late labour but retains the urge to push and good muscle strength and is ideal where good maternal expulsive efforts are important (eg. breech, multiple pregnancy). Rarely, the addition of fentanyl 100 mcg may be appropriate (eg. late labour, unrelieved backache or early perineal pain).
B. 0.25% plain bupivacaine (6-10ml)

Of similar efficacy to the above and slightly longer duration, but results in more marked motor block. Best used if fentanyl inappropriate (eg. very premature or severely compromised fetus; intractable itch) or as a supplement.

C. 0.5% plain bupivacaine (4-10ml)

Marked motor block is usual and this solution is best used as a supplement when less concentrated solutions prove inadequate or to increase neural block for instrumental delivery or caesarean section.

D. 1.5% plain lignocaine or 2% with adrenaline 1:200,000 (10ml)

Slightly faster onset than bupivacaine and thus may be used to establish analgesia (but results in more marked motor block) or to increase neural block (instead of 0.5% bupivacaine).

Adrenaline-containing solutions are best avoided in pre-eclampsia, cardiac patients and in women with evidence of chronically compromised uteroplacental function.

2. Infusions

0.0625% plain bupivacaine plus fentanyl 2mcg / ml (10-15ml / hr)

Delivered by syringe pump. This combination is effective and usually produces minimal motor block, although in some cases it is marked. About 50% of women will require supplementary boluses. The starting rate can be chosen based on the extent of spread with the initial establishment bolus, and occasionally needs adjusting based on dermatomal assessment of sensory block.

Prolonged periods in one lateral position should be avoided or unilateral block may occur. If fentanyl is to be avoided, 0.125% plain bupivacaine can be substituted at the expense of greater motor block. Lower concentrations with both fentanyl and adrenaline may also be effective.

3. Patient-Controlled Epidural Analgesia (PCEA)

0.08-0.125% plain bupivacaine plus fentanyl 3 mcg / ml (4ml incremental bolus; 10 min lockout).

Delivered by PCA pump. This combination is effective but about 50% of women will require supplementary boluses. Other solutions can be used as per epidural infusion technique.
Epidural Complications

It is vitally important that the major, potentially life-threatening complications of epidural techniques are promptly recognised, and appropriate resuscitation and management instituted.

Hypotension

Not uncommon (10-15%). May lead to reduced uteroplacental perfusion and fetal hypoxaemia, depending on its severity, duration and current fetal condition.

Prevention includes the avoidance of aortocaval compression (position in the left lateral), and slow institution of epidural block. Fluid preloading is not required routinely.

Treatment involves patient positioning, intravenous fluid boluses, maternal oxygen and incremental doses of the vasonconstrictor ephedrine (5mg IV repeated as necessary).

Local anaesthetic toxicity

Usually inadvertent intravascular injection with immediate signs and symptoms; rarely cumulative. Incidence approximately 1 in 2,500 epidurals.

Signs and symptoms include neurological at initial toxic plasma levels (drowsiness, restlessness, tinnitus, circumoral tingling, progressing to convulsions); and cardiac at higher toxic levels (arrhythmias, hypotension, cardiac arrest).

Preventative measures include catheter aspiration, test-doses, divided (incremental) dose injection (maximum 25mg bupivacaine), and attention to maximum recommended dose.

Treatment is:
- position left lateral, head down
- oxygen; support airway and ventilation if required; support circulation if required
- summon help, resuscitation equipment and drugs.
- terminate convulsions (thiopentone 50mg; diazepam 5mg repeated; suxamethonium 1.5mg per kg and intubation using cricoid pressure if persisting or cardiovascular toxicity).
- assess fetal well-being

High spinal anaesthesia

Usually rapid onset over 1-10 minutes of ascending sensori-motor block (rising numbness to arms and neck; dyspnoea, progressing to apnoea; loss of consciousness; marked hypotension). Incidence about 1 in 3,000 epidurals.
Prevention - aspirating of catheter for CSF; test doses, then add incremental doses; awareness of unusual response to epidural solution (eg. profound motor block with 0.125-0.25% bupivacaine).

Treatment is:
- position left lateral, head down
- oxygen, support airway and ventilate via a resuscitation bag; support circulation with IV fluid and ephedrine as required.
- summon help, resuscitation drugs and equipment including anaesthetic machine.
- early intubation using cricoid pressure; IPPV / sedation awaiting resolution in 1-3 hours.
- assess fetal well-being.

Inadvertent subarachnoid opioid

Accidental administration of epidural opioid into the CSF may lead to its rapid spread to the brainstem.

Signs and symptoms include nausea-vomiting, severe itch, drowsiness progressing to coma, bradypnoea progressing to apnoea.

Treatment is - oxygen; support airway and ventilation if required.
- naloxone 0.4mg iv repeated as required.

EPIDURAL HAEMATOMA

Definition

Epidural haematoma refers to bleeding or blood clot in the epidural space. Although this is a very rare condition, it is particularly serious as the pressure effects of the haematoma can lead to compression or ischaemia of the spinal cord and subsequent paralysis. This condition may arise spontaneously, especially in anticoagulated patients or those with a bleeding disorder and very rarely in association with epidural or spinal anaesthesia. However, epidural haematoma may be very difficult to diagnose following regional block or in the presence of an epidural infusion, because the symptoms and signs can either be masked or ascribed to the effects of the epidural block or infusion. It is thus crucial to have patients with the following signs and symptoms immediately assessed by medical staff.

Symptoms and Signs

Severe back pain. Although most commonly in the region of the epidural site, it may occur in the buttocks or radiate into the legs. Tenderness at the epidural site may also be present.
Any severe or prolonged sensory or motor block. Motor or sensory block that appears either prolonged or excessive with respect to the original regional procedure or subsequent epidural infusions or bolus doses, may be due to the pressure effects of an epidural haematoma.

Faecal or urinary incontinence.

Management

The Anaesthetic Department must be notified as early as possible by paging the duty Anaesthetist. Early diagnosis and treatment are vital and the epidural haematoma needs to be surgically evacuated within 8 to 12 hours to avoid paraplegia. The diagnosis is confirmed by CT scan or MRI.

Removal of epidural catheters

Removal of epidural catheters may also contribute to epidural haematoma formation if performed in the presence of a coagulopathy and should be delayed if there is any doubt about overall clotting, eg. thrombocytopenia, warfarin treatment etc. Patients on low-dose subcutaneous heparin should have their catheters removed shortly before the next dose. For those on high-dose subcutaneous or intravenous heparin, please consult the Anaesthetist.

Summary

Epidural haematoma is extremely rare but often leads to paraplegia because diagnosis and treatment are too late. A high index of suspicion is needed and any sensory or motor block that is more severe or prolonged that would normally be expected, needs to be referred to the Anaesthetist immediately.

POST OPERATIVE PAIN- Management of epidural and intravenous analgesic solutions.

Epidural Infusions

An epidural catheter is place in the high lumbar or low thoracic region pre- or peri- operatively. Intra- operatively local anaesthetic (usually bupivacaine 0.5%) is used to provide regional blockade, often as an adjunct to general anaesthesia. Patients will usually therefore have some degree of motor blockade on return to the ward. This usually wears off in 6 to 12 hours, but may persist for up to 24 hours.
Infusions consist usually of either Pethidine or Fentanyl, plus or minus bupivacaine. Typical prescriptions are as follows:

- **Pethidine 200mg** (=4mls)  
- **Bupivacaine 0.5%** (=10mls)  
- **Normal Saline** (=36mls)  
  - **TOTAL 50 mls at 2-6ml/hr**  
  - **BOLUS 3 mls**

- **Fentanyl 500mcg** (=10mls)  
- **Normal Saline** (=40mls)  
  - **TOTAL 50 mls at 2.8ml/hr**  
  - **BOLUS 3 mls**

When bupivacaine is added, the final concentration is 0.1%. This is unlikely to produce any degree of sympathetic block, but may produce some degree of motor blockade and numbness. Therefore, patients on infusions containing local anaesthetic should always be mobilised cautiously and if numbness or weakness is a problem, use an opioid alone.

In general, if more than 2 bolus doses are necessary within one hour, the infusion rate should be increased by 2ml/hr. On the other hand, if analgesia is good, the infusion should be gradually decreased by 1ml/hr every 12 hours to avoid toxicity.

If analgesia is inadequate:

The Anaesthetist should be informed and the following should be checked:

- syringe inserted correctly
- syringe is connected to epidural catheter filter
- syringe pump turned on
- no obstruction (pump will usually alarm)
- epidural catheter is in situ - inspect site of insertion, count the number of markings if visible. Consider catheter extrusion, look for signs of fluid around the catheter or in bed.
- test epidural with a bolus dose of local anaesthetic eg. bupivacaine 0.25% 10mls to establish that:
  - catheter is in situ and
  - epidural is working
- if local anaesthetic bolus is effective, either increase the infusion rate or change to another opioid.
- if analgesia is still inadequate abandon the technique and change to another method. The prime aim is to provide analgesia.

The principle of action of epidural opioids is their selective action on pain transmission pathways in the dorsal horn of the spinal cord, but at higher dose rates plasma levels reach the systemic analgesic range.

Local anaesthetics on the other hand are non-selective and block spinal nerve pain pathways, motor pathways and sympathetic nerves. Hence the advantage of epidural opioids over local
anaesthetics is analgesia without attendant motor block (numb legs) or sympathetic block (hypotension)

**Side effects of epidural opioids** may include:

- **Drowsiness** - some opioid is absorbed via epidural veins but the systemic blood level is usually subanalgesic and causes much less drowsiness than, for example, intravenous opioid infusion.

- **Nausea and vomiting** - as with any opioid and to a similar degree to systemic opioids. Treat with Metoclopramide, Prochlorperazine, Droperidol p.r.n..

- **Pruritus** - a not uncommon side effect but seen much less with Pethidine and Fentanyl than with Morphine. May be due to localised effect on the spinal cord or on the central itch centre. Antihistamines usually are ineffective. Naloxone is excellent at relieving moderate to severe itch. Treatment: Naloxone IV or IM. stat 0.2mg and by infusion (eg Naloxone 0.4mg in 8 hourly litre) if pruritus persists. Propofol is also helpful.

- **Urinary retention** - as with narcotic given by any route. If patient is not catheterised watch for urinary retention.

- **Respiratory depression** - as with opioids given by other routes and usually due to rostral spread of opioid within CSF. A well recognised problem with epidural Morphine due to hydrophilicity, but rarely seen with epidural Pethidine or Fentanyl, both of which are lipophilic. During infusion, respiratory rate must be recorded hourly. Notify Respiratory Rate of less than 10 / minute or excessive sedation. Treatment: Oxygen, ventilate if necessary; Naloxone 0.2 - 0.4mg IV stat and repeat as necessary or by infusion.

After major surgery the epidural infusion is usually continued for 2-5 days, gradually weaning if analgesia is good. At this stage, cease infusion and cap epidural and give top-ups as required - eg. Pethidine 50mg in 10mls Normal Saline 2-hourly PRN. This will give some idea of continuing analgesic requirements. If few top-ups are required, remove epidural catheter and use oral or rectal analgesics. If pain is still severe, infusion may need to be recommenced. If opioids are still needed, they should be given via the epidural and not IM unless the epidural is ineffective.

**Intravenous Opioid Infusions**

These may be used if an epidural is contra-indicated, if patient refuses epidural or epidural not effective, or for less major surgery eg. abdominal hysterectomy via Pfannenstiel incision, vaginal surgery.

The infusion should ideally be via a separate intravenous cannula or using an anti-reflux valve. When available, they may be used.
The opioid should be made up into a dilute solution. A burette must always be used and an infusion pump if available.

Examples of prescriptions are:
- PETHIDINE 500 mg in 500mls Normal Saline at 40mls / hr. Bolus= 20mls.
- MORPHINE 50 mg in 500mls Normal Saline at 20-40 mls / hr. Bolus= 20mls.

If a bolus is inadequate after 15 minutes increase infusion rate by 5ml / hr.

On the other hand, if analgesia is good, decrease infusion rate by 5mls / hr every 8-12 hours to avoid toxicity.

**Intravenous Patient-Controlled Analgesia (PCIA).**

Self-administration using PCA pumps connected to a dedicated i.v. cannula or a maintenance line with anti-reflux valve. For both PCIA and Intravenous Opioid Infusion, if analgesic is inadequate, consider:

- infusion not connected to patient
- pump not turned on or functioning correctly
- obstruction in line (pump will usually alarm)
- intravenous cannula obstructed and / or fluid tissuing
- dose requirement of patient is greater than dose infused.

Opioid requirements vary up to 10-fold and individual variation is marked.

Overdose will produce signs of sedation progressing to respiratory depression and unconsciousness.

**Treatment is:**

- cease infusion
- give O2 by mask. Ventilate if necessary
- call medical and anaesthetic staff
- prepare to give Naloxone intravenously

Please refer any problems to the anaesthetic department
DEEP VEIN THROMBOSIS (DVT) PROPHYLAXIS

- All women having Caesarean Section should routinely use graduated elasticated stockings (TED stockings).
- High risk patients for DVT include morbid obesity and previous history of thrombosis. These patients should, in addition to TED stockings, receive:
  a) either Low Molecular Weight Heparin, 2,000-2,500 units two hours pre-operatively and every 24 hours until mobile, or,
  b) Heparin calcium 5,000 units two hours pre-operatively and 8 hourly post-operatively until mobile.
BREAST FEEDING POLICY

Guidelines for feeding of healthy newborns ie 2.5 kgs to 4.0 kgs (term).

Aim

To promote successful breast-feeding of infants from birth to six (6) months of age or as long as possible.

Ante-natal Preparation

• All pregnant women should receive A/N instruction in the care of the breast; examination of breast/nipples usually done at the first antenatal visit and appropriate instruction and advice given.
• Breast feeding techniques must be included in antenatal classes or clinic visits.
• The preferred choice of feeding (ie breast or formula) must be ascertained from the mother on admission to labour room and recorded in nurses notes/kardex.

Post-natal

(a) Vaginal Deliveries

• All babies (who are to be breast-fed) provided they are in "healthy condition", are to be put to the breasts in the delivery room (preferably within the first hour of life). Glucose water does not have to be given after a "good" breast-feed. ("Good" not only defined by length -time- of feed but also by vigorousness of sucking).
• All mothers must be taught proper positioning and latching-on techniques at first breast-feeding attempt. Later an assessment must be done once per shift.

(b) Caesarean Sections

• Due to the fact that most mothers return to their rooms a few hours after surgery, it is advisable to give the baby a glucose water feed. Since most of these babies have gastric lavages, the glucose water can be given by nasogastric.
• Once the mother is warded and is alert and wishes to breast feed, the baby should be put to the breast. During this time, the mother and baby must not be left alone.
• Subsequent feeds should be breast feeds. If mother has requested a comp, the request must be noted in the nurses notes and cup, pipette or syringe used.
• Reasonable limits to demand feeding are 1 1/2 to 5 hourly with no time limit to duration of feed at the breast, at the discretion of the midwife and mother.
• The whole feeding picture needs to be assessed ie vigorousness of suck, correct latch-on, length of feed, total number of feeds in all mothers should be encouraged to continue
breast-feeding throughout the night. The baby may remain in the nursery if the mother wishes but must be taken to the mother for breast-feeds.

- Complementary feeds will not be offered unless medically indicated and the mother has been consulted. This would then be given by cup, pipette, or syringe.

**Treatment of sore nipples**

- The cause of sore nipples (which is usually improper latch-on) should be ascertained and managed according to the problem. Creams should be avoided unless an appropriate cream is available and warranted. Mothers should be taught to air-dry breast after each feed.
- The use of olive oil should be used as a lubricant when patient uses breast pump only.

**Drugs and breast-feeding**

Staff are responsible to ensure that breast-feeding mothers only receive drugs compatible with breast feeding.

**Breast-feeding and Jaundice**

In cases of physiological jaundice, breast-feeding should not be discontinued. However, frequent breast feeds should be encouraged, jaundice monitored, number of stools observed. Comps of glucose water or formula are not necessary unless bilirubin levels rise rapidly or reach levels of twelve (12) by day two (48 hours). If extra fluids become necessary, formula (not glucose water) should be given. This can be given by cup, pipette or syringe. (To avoid nipple confusion). Nasogastric feeds may be needed if baby is lethargic or drowsy.

**Separation of mother and baby**

When mothers and babies are separated or when the baby is unable to latch on the breast, she must be taught how to use the breast pump, and how to store her milk.

**Pumping**

- Begin pumping as soon after delivery as conditions permit.
- Pump at least 5 times in 24 hours.
- Allow a rest period of uninterrupted sleep of at least 6 hours.
- Pump a total of 100 mins per day.
- Preparation of breasts - warm soaks, gentle stroking and light massage maximizes pumping.
Storing

- Use plastic bottles
- Fresh refrigerated milk can be used for 24 hours.
- If not used within 24 hours, freeze milk. Frozen milk can be stored for 3 months. (Evenflo bags recommended).
- Label - name, date and time expressed.
- Frozen milk should be thawed in refrigerator.
- Bottles and flange need to be scrubbed - soap, hot water and bottle brush before sterilizing. This removes the fat stuck on the side of the bottle.
- To sterilize, boil bottles etc x 15 min or put in Milton x 30 min, be sure no bubbles are trapped in bottles.

Breast-feeding and HIV Positive mothers

Since clean water and formulae are available to mothers in the Cayman Islands, HIV positive mothers should be discouraged from breast-feeding. Support from Social Services should be given if needed to assist the mother and child in receiving adequate nutrition.
STILLBIRTHS

Definition: Any fetus delivered after 23 completed weeks of pregnancy (Birth Weight of 500 gm or more) and showing no signs of life.

All staff involved should be aware of the sensitive handling needed for the trauma of a stillbirth. The midwife looking after the mother shall:

- Attach to the front of the mother’s notes the checklist for stillbirth / neonatal death (see next page- loose copies should be available on labour ward).
- Contact the supervisor on duty.
- Contact the Obstetrician and Paediatrician on call.
- Allow parents to see and handle the infant whenever possible.
- Help in the psychological and physical aspects of care in this hour of need.
- Keep parents clear of other labouring mothers and crying infants as far as possible.
- Always try to discharge the parents early.
- Organize counselling at home, home visits.
- Make an appointment to see Obstetrician in six weeks (at the Gynae clinic and not antenatal clinic), for check-up and follow-up counselling and referral to Genetic counsellor if necessary.
- Prevent lactation with good breast support and bromocriptine.

The Obstetrician in consultation with Paediatrician shall decide what tests should be carried out from the Stillbirth / Neonatal Death checklist. The Obstetrician will try to obtain parental consent for autopsy and explain the investigations, as well as give as much available information as to the cause of stillbirth.
### CHECKLIST FOR STILLBIRTH/NEONATAL DEATH

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<thead>
<tr>
<th></th>
<th>PERFORMED (TICK)</th>
<th>SIGNATURE</th>
<th>REMARKS</th>
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<tbody>
<tr>
<td><strong>INFORM:</strong></td>
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<tr>
<td>Consultant</td>
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<tr>
<td>Paediatrician</td>
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<tr>
<td>Head of Midwifery</td>
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<td>Community Midwife</td>
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<tr>
<td>Health Visitor</td>
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<tr>
<td>Minister of Religion (if requested)</td>
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<tr>
<td>Social Worker</td>
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<tr>
<td><strong>BABY:</strong></td>
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<tr>
<td>Weight, head, circumference, length</td>
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<tr>
<td>Physical examination</td>
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<tr>
<td>Footprint / Handprint onto card</td>
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<tr>
<td>Lock of hair in envelope</td>
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<tr>
<td>Cot card x2</td>
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<td>Baby labels</td>
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<tr>
<td>Photographs</td>
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<tr>
<td><strong>PARENTS:</strong></td>
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<tr>
<td>Hold baby if they wish</td>
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<tr>
<td>Photos, prints, hair, labels, cot card given them</td>
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<tr>
<td>Counselling booklet or information</td>
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<tr>
<td>Sign form for P.M. if necessary</td>
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<tr>
<td><strong>INVESTIGATIONS-Baby:</strong></td>
<td></td>
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<tr>
<td>Intra-cardiac blood-Heparin bottle (Karyotype)</td>
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<tr>
<td>Deep ear swab</td>
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<tr>
<td>Placental swab</td>
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<tr>
<td>Skin sample in normal saline if no P.M.</td>
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<tr>
<td>Bacterial swab from mouth, nose, ear,rectum</td>
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<tr>
<td><strong>INVESTIGATIONS-Mother:</strong></td>
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<tr>
<td>HVS for C&amp;S and Listeria</td>
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<tr>
<td>Chlamydia-Endocervical swab</td>
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<tr>
<td>TORCH</td>
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<td>FBC</td>
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<tr>
<td>Hb A1C</td>
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<tr>
<td>Blood Cultures if Pyrexial</td>
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<tr>
<td>Antiphospholipid Ab.</td>
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CHECKLIST FOR STILLBIRTH/NEONATAL DEATH (continued)

Mother's Name:
Hospital Number:

<table>
<thead>
<tr>
<th>ADMINISTRATION:</th>
<th>PERFORMED (TICK)</th>
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<th>REMARKS</th>
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<tbody>
<tr>
<td>Notifications</td>
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<tr>
<td>Stillbirth certificate (to register)</td>
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<tr>
<td>Notice of Death</td>
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<tr>
<td>Pathology request form</td>
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<tr>
<td>Post Mortem Consent form</td>
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<td>Burial Disposal</td>
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<tr>
<td>Inform Funeral Home</td>
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<tr>
<td>P.M./ Cytogenetics Unit</td>
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<tr>
<th>POST-NATA L:</th>
<th>PERFORMED (TICK)</th>
<th>SIGNATURE</th>
<th>REMARKS</th>
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<tbody>
<tr>
<td>Bromocriptine</td>
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<tr>
<td>Six week appointment in Gynae clinic</td>
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</table>
STANDING ORDERS FOR ADMINISTRATION OF MEDICINES AND SPECIAL REGIMENS BY MIDWIVES

1. By agreement with the Consultant Obstetrician and Supervisor of Midwives, midwives are authorised to administer certain medicines to women during pregnancy, labour and the post-natal period.

2. Rules applicable to use of medicines apply. It is the duty of the midwives to:
   (i) observe the regulations concerning controlled drugs;
   (ii) familiarise herself with the normal dose, effects, side effects and contra-indications of all medicines contained in “Standing Orders”;
   (iii) observe the UKCC Code of Professional Conduct, Midwives’ Rules and Code of Practice and UKCC “Administration of Medicines”.

3. Medicines other than those covered by the standing order must also be written on the prescription chart and signed by the doctor concerned, within 24 hours.

4. In an emergency a verbal order for medicines may be written on the prescription chart by the midwife and signed by the doctor. This must be signed by the prescriber within 24 hours.

Antenatal

- **Pregaday** 304 mgs ferrous fumerate & 350 microgrammes Folic Acid daily to ladies who have an Hb of 11 gms or less at booking.
- **Night Sedation** 10 mgs temazepam orally as required at night.
- **Pain Relief** 500 mgs Paracetamol tablets x 2, 4-6 hourly as required (maximum 8 in 24 hours).
- **Prostaglandin E₂ vaginal gel** (Prostin) 1-2 mgs high in the posterior fornix as per obstetrician’s orders.

Labour

- Two **Glycerine suppositories** may be used, if required.
- **Pethidine Hydrochloride**: Dosage: 75mg - 150mg I.M. followed by up to 150 mg as required for 2 doses with an interval of at least 3-4 hours between doses. Pethidine should always be given with an anti-emetic i.m..
- Anti-emetic of choice is **Metoclopramide (Maxolon)** 10 mgs; **Promethazine Hydrochloride (Phenergan)** 25 mg or **Prochlorperazine (Stemetil)** 12.5 mgs may also be used. Individual
doctors should indicate their preference of anti-emetic in specific standing orders (if it is other than Maxolon).

- **Entonox** (Nitrous oxide 50%, Oxygen 50%) as required by mothers in labour.

- **Transcutaneous Electrical Never Stimulation** (TENS) may be used on mother’s request following Unit procedure.

- **Syntometrine** (Oxytocin 5 units and Ergometrine 0.5 mg): One amp. for prophylactic administration, in the second stage of labour, with the delivery of the anterior shoulder.

- **Ergometrine Maleate**: Dosage: 0.5 mg I.M. or I.V. for treatment of excessive bleeding after delivery.

- **Lignocaine Hydrochloride**: Dosage: 5ml of 1% solution - local infiltration of the perineum prior to Episiotomy. Up to 20 mls of 1% solution prior to perineal repair.

### Postnatal

- **Temazepam** 10-20 mgs tablets when required at night.

- **Paracetamol** (500 mgs), two tablets when required for relief of pain (maximum 8 tablets in 24 hours for 5 days).

- **Dihydrocodeine with Paracetamol tablets** (Co-Dydramol) 2 tablets 4-6 hourly for 5 days (not more than eight in 24 hours).

- **Ferrous Gluconate**, 1-2 tablets twice a day.

- **Isphaghula Husk / Metamucil**, one sachet in a glass of water once or twice a day for constipation.

- **Glycerine Suppositories**, two may be used if bowels not opened by the second evening at midwives’ discretion.

- **Co-dydramol Cocktail** (15 ml peppermint water + 15 ml magnesium trisilicate + 15 ml simple linctus + 2 soluble co-codamol tablets). Not more than 4 doses in 24 hours, for abdominal wind / chest pain post Caesarean Section.

- **Xyloproct ointment** or **Proctosedyl ointment** or **Anusol ointment** to apply as necessary for painful haemorrhoids.

- **Naloxone Hydrochloride** (Narcan Neonatal = 40 micrograms in 2 mls) to neonate: give 1 ampoule, (2 mls = 40 micrograms), i.m. or i.v.; may be repeated every 2-3 minutes.
REGIMEN FOR PREVENTION OF ACID ASPIRATION PNEUMONITIS

During labour
Ranitidine (Zantac) 150 mg orally every 6 hours. Start as soon as the labour is established.

For Caesarean Section (including Epidural)

1. Elective:
   a) Ranitidine 150 mgs orally 22.00 hours night before operation.
   b) Ranitidine 150 mgs orally 2 hours before operation / 50 mg IV
   c) Metoclopramide 10 mg IM 1 hour before operation.
   d) Molar Sodium Citrate 30 ml orally 10 minutes before operation.

2. Emergency: 0.3 Molar Sodium Citrate 30 ml orally 10 minutes before anaesthetic.

For forceps and other emergency procedures under general anaesthesia:
0.3 Molar Sodium Citrate - 30 ml orally 10 minutes before induction of Anesthetic.

REGIMEN FOR VITAMIN K PROPHYLAXIS

1. Intramuscular Vitamin K 1 mg This will be given to all babies including high risk group of Haemolytic Disease of the Newborn (HDN), which includes:
   - Caesarean sections
   - Instrumental deliveries
   - Birth Asphyxia
   - Birth trauma (eg shoulder dystocia, large cephalohaematoma).
   - Infants of mothers on anticonvulsants
   - Siblings of babies who have had HDN
   - Most admissions to SCBU
It is essential that the date, time and route of administration of Vitamin K is clearly written in the notes, together with the signature of the person who administered it (A stamp has been prepared for this purpose).

**SYNTOCINON REGIMEN**

- **Primips** - 10 units of Synto in 500 mls of Dextrose / Saline.
- **Multips** - 5 units of Synto in 500 mls of Dextrose / Saline.

Start the infusion at 30 mls per hour and increase by 30 mls every 20 minutes until strong uterine contractions are occurring every 2-3 minutes up to a maximum infusion rate of 120 mls per hour.

NB: Syntocinon is not usually given unless membranes are ruptured.

Continuous CTG monitoring is necessary. If there is evidence of fetal distress Syntocinon should be discontinued and obstetrician informed immediately.
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