Disclaimer: As we all know, we are still students and henceforth bound to make mistakes, however, we will try our very best to convey all knowledge based on the Malaysia protocols. By that, we do not hold any responsibilities should our presentations bear mishaps in the future.
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List of Abbreviations:

1. AC- abdominal circumference  43. ERT- estrogen replacement therapy
2. AFI- amniotic fluid index  44. E2- estradiol
3. AFP- Alpha feto protein  45. EUA- examination under anaesthesia
4. ACL- Anticardioliopin antibody  46. EBL- estimated blood loss
5. AID- artificial insemination of husband’s sperm  47. FL- femur length
6. AID- artificial insemination of donor’s sperm  48. FKC- fetal kick chart
7. ANC- antenatal clinic  49. FSB- fresh still birth
8. APH- antepartum hemorrhage  50. FH-fetal heart
9. APS- antiphospholipid syndrome  51. FHH-fetal heart heard
10. ARM- artificial rupture of membrane  52. FHNH-fetal heart not heard
11. A&W- alive n well  53. FHHR- fetal heart heard regular
12. ACH-after coming head  54. FM- fetal movement
13. BBA- born before arrival  55. GDM- gestational DM
14. BOH- bad obs history  56. GS- gestational sac
15. BPD- biparietal diameter  57. G- gravida
16. BPP- biophysical profile  58. GnRH- gonadotropin releasing hormone
17. BSO- Bilateral salpingoophorectomy  59. GBS- group B streptococcus
18. BTL- bilateral tubal ligation  60. H- head circumference
19. BSP- blood sugar profile  61. hCG- human chorionic gonadotropin
20. CCT- controlled cord traction  62. HRT- hormone replacement therapy
21. CIN- cervical intraepithelial neoplasia  63. HSG- hysterosalphingogram
22. COCP- combined oral contraceptive pills  64. HbA1c- glycosylated Hb
23. CRL- crown rump length  65. HVS- high vaginal swab
24. CTG- cardiotocograph  66. Hystrec- hysterectomy
25. Cx- cervix  67. HGSIL-high grade squamous intraepithelial lesion
26. CRN- cord round neck  68. HPV- human papilloma virus
27. CEA- carcino embryogenic antigen  69. h/o- history of
28. c/o- complaint of  70. IE- impending eclampsia
29. DD&C- diagnostic dilatation n curettage  71. IGT- impaired glucose tolerance
30. DVT- deep vein thrombosis  72. IOL- induction of labour
31. d/w- discuss with  73. ISD- interspinous diameter
32. D&C- dilatation and curettage  74. ITD- intertuberous diameter
33. DIVC- disseminated intravascular coagulation  75. IUCD- intrauterine contraceptive device
34. DUB- dysfunctional uterine bleeding  76. IU- intrauterine insemination
35. DCDA- dichorionic diamniotic  77. IUD- intrauterine death
36. DCMA- Dichorionic monoamniotic  78. IUGS- intrauterine gestational sac
37. ECV- external cephalic version  79. IUGR- intrauterine growth restriction
38. EDD- estimated date of delivery  80. I&D- incision and drainage
39. EFW- estimated fetus weight  81. Ix- investigation
40. EL LSCS- elective lower segment C-section  82. IVF- in vitro fertilization
41. EM LSCS- emergency lower segment C-section  83. KIV- keep in view
42. ERPOC- evacuation of retained products of conception  84. KK- klinik kesihatan
43. LA- lupus anticoagulant
44. NNAD- nascence and death
86. Lap & Dye- laparascopy and dye insufflation
87. LAVH- Laparoscopic assisted vaginal hysterectomy
88. LMSL- light meconium stained liquor
89. LNMP- last normal menstrual period
90. LPC- labour progress chart
91. LOA- left occipito anterior
92. LOP- left occipito posterior
93. LOT- left occipito transverse
94. LH- luteinizing hormone
95. LBW- low birth weight
96. LGSIL- low grade squamous intraepithelial lesion
97. MA- membrane absent
98. MOGTT- modified oral glucose tolerance test
99. MI- membrane intact
100. MMSL- moderately meconium stained liquor
101. MOD- mode of delivery
102. MMG- mammogram
103. MRP- manual removal of placenta
104. MSB- macerated stillbirth
105. OCP- oral contraceptive pills
106. OA- occipito anterior
107. OP- occipito posterior
108. OT- occipito transverse
109. OI- ovulation induction
110. o/e- on examination
111. PA- placenta abruptio
112. PCOS- polycystic ovarian syndrome
113. PE- pre-eclampsia/ pulmonary embolism
114. PE chart- pre-eclampsia chart
115. PFR- pelvic floor repair
116. PID- pelvic inflammatory disease
117. PIH- pregnancy induced hypertension
118. PNC- postnatal clinic
119. POA- period of amenorrhea
120. POC- product of conception
121. POD- pouch of Douglas
122. PMB- postmenopausal bleeding
123. POG- period of gestation
124. POP- progesterone only pills
125. PP- placenta previa
126. PPH- postpartum hemorrhage
127. PROM- premature/prelabour rupture of membrane
128. PPROM- preterm premature/prelabour rupture of membrane
129. PV- per vaginal
130. P/A- per abdomen
131. P- para
132. REDD- revised expected date of delivery
133. ROA- right occipito anterior
134. ROP- right occipito posterior
135. ROT- right occipito transverse
136. Re- review
137. RPC- retro-placental clot
138. S&C- suction and curettage
139. SE- speculum examination
140. SFH- symphysiofundal height
141. SGA- small for gestational age
142. SPA- suprapubic angle
143. SROM- spontaneous rupture of membrane
144. St- station
145. SVD- spontaneous vaginal delivery
146. SOD- sure of date
147. s/b- seen by
148. STO- suture to open
149. SCC- squamous cell carcinoma
150. STD- sexually transmitted disease
151. STI- sexually transmitted infection
152. Synto- syntocinon
153. TAHBSO- total abdominal hysterectomy with bilateral salpingoophorectomy
154. TAS- transabdominal scan
155. TCA- to come again
156. TLH- total laparoscopic hysterectomy
157. TOS- trial of scar
158. TOP- termination of pregnancy
159. TVS- transvaginal scan
160. TMSL- thick meconium stained liquor
161. UV prolapsed- uterovaginal prolapse
162. Ut- uterus (Ut-TS: uterus at term size)
163. UPT- urine pregnancy test
164. USOD- unsure of date
165. VBAC- vaginal birth after Caesarean
166. VE- vaginal examination
167. V/v- vulva/vagina
168. Vx- vertex
Part 1: History Taking

1. IDENTIFICATION DATA:
   - Name:
   - Age:
   - Race:
   - Gravida/para: (twins-abortion/molar pregnancy)
   - Last normal menstrual period (LNMP):
   - Expected date of delivery (EDD): (if pregnant)
   - Period of amenorrhea (POA)/gestation (POG):
   - Date of admission:
   - Date of delivery/operation:
   - Date of discharge:

   **Gravidity** = total number of pregnancy regardless of its outcome, including present one

   **Parity** = Number of live births and stillbirths delivered after stage of viability (24wks)

   E.g.: 1) Lady on her 1st pregnancy – G1P0
   2) Woman had twins and pregnant now (24wks) – G2P2
   3) A woman has had 4 miscarriages and is pregnant again with only one live baby; she is at 26 wks of gestation now – G6P1+4
   4) A lady in her 6th pregnancy, with history of 1 abortion and 1 molar pregnancy – G6P3+1 abortion, 1 molar pregnancy.

   **EDD**

   Naegele’s rule:

   Add 7 days to LMP, subtract 3 months from the month  OR

   Add 7 days from LMP and add 9 months to the month.

   1) Day of visit: 20/10/09
      LMP: 26/01/09
      EDD (LMP+7days+9months): 03/11/09
      POA: 40 wk – (11d + 3d) = 40 wk-2wk
      (by EDD) = 38wks

   2) DOV: 21/06/09
      LMP: 17/04/09
      EDD : 24/01/10
      POA (by LMP): 2 mth + 4d = (2x4 wk) + 4d
      = 8 wks 4d

   *For POA finding, every 3 month should add 1 more week.

   Eg. DOV : 22/02/09
      LMP: 10/11/08
      EDD : 17/8/09
      POA : 3 mth + 12d = (3x4) + 1wk +12d
      = 13wk +12d = 14wk + 5d

   3) DOV : 24/06/09
      LMP: 26/01/09
      EDD : 03/11/09
      POA : 4mth + 24d +5d = (4x4)+1wk+29d
      = 17wk + 4wk +1d = 21wks + 1d

   4) DOV : 05/03/09
      LMP: 20/12/08
      EDD : 27/9/09
      POA : 2 mth + 5d + 11d = (2x4) + 16d
      = 8wk + 2 w + 2d = 10wks +2d
QUESTIONS: FINDS THE EDD AND POA
1) DOV: 20/03/10  LMP: 03/07/09
2) DOV: 01/08/09  LMP: 23/01/09
3) DOV: 14/07/09  LMP: 27/03/09

2. CHIEF COMPLAINTS (c/o):
   1) Contraction pain? Duration? Regular/ Irregular?
   2) With or without show (blood-stained mucous from vagina)
   4) Antenatal pyrexia?
   5) FM (fetal movement) – good/less/not moving? – ‘Fetal kick chart’
   6) Anaemia
   7) s/s of URTI / UTI?

CHECK LIST FOR OBSTETRIC CASE
1. History of Present Illness
2. Past Obstetric History
3. Contraception History
4. Gynaecological History
5. Past Surgical History
6. Past Medical History
7. Past Family History
8. Social History

PRESENTING AN OBSTETRIC CASE

INTRODUCTION SENTENCE
Madam Ling Siew Choo is a 25 year-old Gravida 3 para 2 Chinese, at 32 weeks POA who is admitted for painless PV bleeding of 1 day duration for further management.

SECOND SENTENCE
Her LMP was on the 15th of September last year. She has regular 28-30 days menstrual cycle.

Therefore, her EDD is on the 22nd of June, 2002 and she is currently at 32 weeks POA.

TAKING THE GYNAE / MENSTRUAL HISTORY
   • Menses - regular/irregular and what is the range? Formula = 12 \( \frac{28-30 \text{ days}}{5-7 \text{ days}} \)
     - flow normal / minimal / heavy?
     - duration of flow?
     - Any dysmenorrhoea
   • Sexual Intercourse - Any dyspareunia?
     - Superficial or deep?
   • Any other gynae problems such as PV discharge?
   • Any pap smear done?
PAST OBSTETRIC HISTORY

LIST THE PREVIOUS PREGNANCIES
1. Year of deliveries
2. The health institution for the delivery etc.
3. TYPE OF DELIVERIES - SVD, LSCS
4. POA at delivery
5. Any medical problems
6. Miscarriage - POA, cause ?, ERPOC?
7. Post delivery cx
8. Babies - weight, sex, abN, neonatal cx, alive/dead

Eg. She had delivered 5 children between 1992 till 1997 which were all uneventful spontaneous vaginal delivery with babies weight ranging between 2.8 to 3.5 kg. All the children were normal, alive and well.

❖ If the POH is complicated, give the main findings first.

CLERKING A COMPLICATED PAST OBSTETRIC HISTORY

 Past h/o Miscarriage
  - Which trimester was it ?
  - Was it a confirmed pregnancy ?UPT/Ultrasound?
  - Was any ERPOC performed ?
  - Was there any complication such as infection / foul smelling PV discharge, delayed period ?

PRESENTING A COMPLICATED PAST OBSTETRIC HISTORY – h/o Miscarriage

She had delivered 5 children between 1992 till 1997 with a history of one miscarriage in the third pregnancy.

✔ The miscarriage at 9 weeks POA was a confirmed pregnancy diagnosed by ultrasound. An ERPOC was performed and there was no complication following the procedure.

✔ The rest of the pregnancies were delivered by spontaneous vaginal delivery The babies weights ranged between 2.8 to 3.5 kg. All the children were normal, alive and well.

CONTRACEPTION HISTORY

Clerking the Contraception History
1. How many children does the couple wants ?
2. Is the family complete ?
3. What form of contraception are they practising or intend to use ? What have they used before ?
4. Do you think their compliance can be assured ?
5. What contraception do you think is the most suitable for them based on their history and your assessment ?
6. Are they aware of the side-effects and complications as well as the advantages and disadvantages ?
7. How long do you suggest they should use this method ?
PAST MEDICAL / SURGICAL History

Past history of pre-existing diseases:

- Hypertension,
- diabetes mellitus,
- asthma, COPD,
- heart disease,
- epilepsy,
- renal dss,
- venous thromboembolic dss,
- HIV infection,
- CT dss,
- myasthenia gravis/myotonic dystrophy etc

Any relevant past history of hospitalization (including past operation done)

✔ e.g appendectomy, hernial repair, Bowel operation etc
✔ Mention the year of diagnosis
✔ Mention the status of condition
✔ Eg: Hypertension-10 years on regular treatment

Diabetes type II – 6 years on dietary control

FAMILY HISTORY

- Relevant family history e.g Diabetic, hypertension, heart disease, twins, breast cancer, Ovarian cancer etc
- Of Siblings and parents
- Twins, congenital abnormality
- Hereditary

PERSONAL & SOCIAL HISTORY

- marital status
- patient / husband’s occupation and income
- smoking, alcohol or drug abuse
- who is taking care of children
- recent travels
- domestic condition
- Sexual activity

DRUG HISTORY

- Prescribed drugs
  - Name, Dose, Duration or what is it for, what colour, how many times a day, how long.
- On prescribe drugs (over the counter)
- Herbal or complementary therapy
- History of allergies to drugs
  - Name of the drugs, what actually happens when patient took the drugs
  - Rashes, swelling of face & difficulty breathing are important allergic reactions
  - Nausea, vomiting or diarrhea are not necessarily allergic reactions
- Allergy to certain food?
SUMMARY
Date : Time :

Age / Race / Sex :

G ? P? : EDD :

LMP : ( SOD / USOD – BF, OCP ) POA / POG :

C/O :

ANC (Antenatal clinic)/ Booking @ ?/52 + ?/7 :
- VDRL / TPHA / HIV
- B/G
- BW, Ht
- MOGTT - Indications : obesity, multipara, family history, previous GDM, >35 y.o, history of stillbirth
- Urine – proteinuria? Glucosuria?
- MBG
- Hb
- Latest scan @ ?/52 + ?/7
- Past Obstetrics history
- Past Gynaecology history
- Contraceptive history
- Past Medical / Surgical history
- Family history
- Social history

O/E : -alert, conscious, pink
- comfortable

V/S : -BP
-PR
-RR
-Body Temperature

CVS : DRNM

Lungs : Clear

P/A :

1. soft, non-tender
2. SFH (symphysis fundal height)
3. UT@TS (Uterus at term size)
4. S / L / C
5. EFW (Estimated Fetal Weight )
6. Head of fetus – palpable or not ( ?/5)
7. Liquor – Oligo- / Poly- / Normohydramnios
8. Auscultate fetal heart sound by Pinard stethoscope
VE :
1. V/V NAD (Vulvar and Vagina, no abnormality detected)
2. Os dilation = ?cm
3. Cx (Effacement) – soft / median / tubular, 1 / 2 cm
4. Station of the presenting part – foetus vertex
   +2, +1, 0, -1, -2

5. MI / MA - CL (Clear liquor)
   - LMSL (Light meconium-stained liquor)
   - MMSL (Moderate meconium-stained liquor)
   - TMSL (Thick meconium-stained liquor)

6. Cord / Placenta
7. Caput / Moulding

Imp. :
1) 1 prev scar
2) No VBAC (vaginal birth after Caesarean)
3) Keen for TOS (trial of scar)

Ix :
1. FBC
2. GSH (group screen hold)
3. HVS (high vaginal swab) – in case of PROM / PPROM
4. UFEME (Urine Full Examination Microscopic Elements)

Plan: (in labour room)
1. V/S & FHR 4 hrly monitoring
2. Time contraction
3. Plot Partogram
4. CTG
5. LPC (Labour progress chart) / FKC
6. IM Analgesia as required:
   - IM Pethidine 75mg, PRN (pro re natal)
   - IM Phenergen 25mg, PRN
7. NRVE on strong & regular contraction / SROM / 4 hourly.
8. Scan by M.O.
**Part 2: Normal Labour**

**Definition:**
The process whereby there is a spontaneous onset of painful, regular contractions at term which followed by effacement and dilatation of cervix and descent of the presenting part which resulted in birth of a normal foetus and expulsion of the placenta

- **3 stages**
  - 1st: cervical dilation fr 0-10cm
    - Latent phase (0-3cm)
    - Active phase (3-10cm)
  - 2nd: fr full dilation to delivery of fetus
  - 3rd: fr delivery of fetus to delivery of placenta

**1st stage (Latent phase)**

**Dx**
- Regular painful contractions
- Significant cervical effacement
- Cervical dilation up to 3cm

**Duration**
- PRIMI: 20 hrs (mean 8 hrs)
- MULTIPARA: 14 hrs (mean 6 hrs)

**DDx: FALSE LABOUR**
- Contractions - irregular and intensity varies
- Contractions may be painless
- If painful, intensity same
- Painful contractions are relieved by sedation
- No progression in cervical effacement and dilatation
- No evidence of fetal compromise
- Patient should be reassured that she is not in labour and allowed discharge.

**Management**
- V/s (BP,PR,T) monitoring of the maternal condition 4Hourly
- Fetal monitoring 4H ~ CTG or pinard
- Abdomen examination, time contraction within 10min
- R/v VE on strong and regular contractions
- Consider pain relief as required by patient

**Active phase**

**Ix**
- FBC
- UFEME
- GSH (for all in labour)
- GXM (for high risk labour)

**MANAGEMENT**
1. R/V History and problem
2. V/S monitoring
3. Abd examination, time contraction (aim contraction **for 3-4:10min**)
4. VE (on strong n regular contraction)
5. ARM
6. Start partogram
7. CTG monitoring 2hr-ly for 20min (if normal CTG + good contraction, consider IM Pethidine 75mg +IM Phenergen 25mg)
8. Time for next R/V
   - <6cm at 1st VE-next 4 hrs
   - >6cm next VE when full dilation is expected
**2ND STAGE**

- Catheterise patient
- Check position of patient
- Continuous monitoring of uterine contraction
- Encourage pt to push with each contraction (chin to chest, look to abd, take deep breath n push)
- When no contraction, ask pt to stop pushing. Monitor FHR
- Sweep vulva gently
- Perineal guarding n push head down
- Usually episiotomy at ‘crowning’
- Delivery of head
- Check for any cord around neck
- Foetus head pull biparietally downward with mother’s effort
- Delivery of whole baby.
- Clamping and cutting of cord*
- Wipe and suction of newborn
- Cord blood- TSH,G6PD*
- Syntometrine/syntocinon IM on maternal thigh
- 1st touch btw mother n child

**3rd: PLACENTA DELIVERY**

- Interval between period after delivery of fetus and complete delivery of placenta
- *Ask mother to relax and don’t try to push during this stage!!!*

**SIGNS OF PLACENTAL SEPARATION:**

1. Gushing of blood
2. lengthening of cord
3. elevation of fundus as the uterus contracts(globulation)

**ACTIVE MANAGEMENT- Syntometrine/Syntocinon**

- **CCT**
  - give 1ml *syntometrine IM* (syntocinon + ergometrine) the patient’s thigh for healthy patient.
  - Patient with PIH & heart problem only can be given 10 units *syntocinon IM*

**CCT-**

- Left hand is placed suprapubically over uterus Press uterus backwards towards the mother.
- Grasp cord by clamp with right hand and apply gentle traction (1st slightly downwards,then upwards)
- When placenta is seen, deliver it with both hands in rotation movement
- Clamp the coming membrane n remove slowly in rotation movement too.
- massage of fundus of uterus
- Remove blood clot by right hand (position of hand- VE position)
- Use cotton to clean up the vaginal area
- Check if present tears???
  - If after ½ hour (30 minutes) the placenta still not delivered, inform specialist. Usually will do *MRP* (manual removal of placenta)
MANUAL REMOVAL OF PLACENTA (MRP)

Preparation:
- Antibiotic cover (see Antibiotic guidelines)
- Adequate analgesia, preferably under GA or regional anaesthesia, if patient is already on epidural, procedure can be carried out in the LR
- Put patient in lithotomy position and apply perineal sheet (sterile)
- The operator should be scrubbed and gowned with MRP gloves.
  1. Introducing one hand into vagina along the cord
  2. Grasping fundus with other hand, while detaching the placenta with sideways slicing movement of the fingers
  3. Grasp placenta in the palm of hand
  4. Examination of placenta for completeness
- It is important to re-explore the uterine cavity to make sure no placental tissue is left behind.
- Once the uterus is confirmed empty:
  ✓ Intravenous infusion of oxytocin 40 units at 60-80 mls/hour.
  ✓ Uterine massage
  ✓ Manual compression

PLACENTA CHECKING
1. Check the umbilical cord
   - 2 arteries & 1 vein
   - Measure length of cord (normally 40-60 cm) — use finger to estimate, end of middle finger till end of thumb → 15 cm
   - Colour of cord
   - Where the cord planted on placenta – centre or lateral
   - Present of knot or not. If yes, distinguish either true or false knot

2. Check the placenta
   - Opening of membrane (normally 1)
     If > than 1 – may be because of tear of the membrane, may be some part of membrane left inside
   - Cotyledons – colour
     - lobes (norm: 18-20)

   INFARCT - dead of tissues (caused by decrease O₂ supply → decrease fx of placenta)
   - common in post-date delivery
   how to know?
   - feel it by hand – sandy-like
   - white spot on cotyledon
   (use cotton to clean up the cotyledon)

   Membrane layers
   1) amnion layer (foetus’ side-inner)
      - translucent
      - thin, shiny
      - high in tensile strength

   2) chorion layer (mother’s side-outer) - easy to break, shaggy

3. Measure blood loss volume
   - include the blood clots
   - < 500 ml
Cardiotocography (CTG) is a method of monitoring foetal heart rate and maternal uterine contraction using principle of Doppler Effect to detect foetal heart motion. 2 electrodes: (a) Electrode on Fundus (b) Electrode on site where foetal heart sound is detected.

### Indication of Continuous CTG monitoring

<table>
<thead>
<tr>
<th>Maternal Reasons</th>
<th>Foetal Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Cardiovascular Diseases</td>
<td>• IUGR</td>
</tr>
<tr>
<td>• DM</td>
<td>• Prematurity</td>
</tr>
<tr>
<td>• Chorioamnionitis</td>
<td>• Multiple Pregnancy</td>
</tr>
<tr>
<td>• Previous LSCS</td>
<td></td>
</tr>
<tr>
<td>• Antepartum – if &lt;9 marks on foetal kick chart in 12 hrs</td>
<td></td>
</tr>
</tbody>
</table>

5 Criteria of Cardiotocography:

- 4 Foetal
  - Baseline Foetal Heart Rate
  - Baseline Variability
  - Acceleration
  - Deceleration

- 1 Maternal
  - Uterine Contraction
1. **Baseline Foetal Heart Rate (BFHR)** is the mean level of foetal heart rate, determined over time period of 5 or 10 min when this is stable, with acceleration and deceleration excluded. Unit: beat per minute (bpm). **Norm: 110-160 bpm.** BFHR should falls as gestation age increase due to maturation of PSN tone.

<table>
<thead>
<tr>
<th>Decrease (Bradycardia) &lt;110 bpm</th>
<th>Increase (Tachycardia) &gt;160 bpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>• GA &gt; 40/52 (90-110)</td>
<td><strong>Maternal Cause</strong></td>
</tr>
<tr>
<td>• Cord compression &amp; acute hypoxia</td>
<td>• Maternal stress and anxiety</td>
</tr>
<tr>
<td>• Congenital heart malformation</td>
<td>• Pyrexia</td>
</tr>
<tr>
<td>• Drug – s.a. benzothiazepam</td>
<td>• Infections</td>
</tr>
<tr>
<td></td>
<td>• Dehydration</td>
</tr>
<tr>
<td></td>
<td>• Anaemia</td>
</tr>
<tr>
<td></td>
<td>• Drug - tocolytics</td>
</tr>
<tr>
<td><strong>Foetal Cause</strong></td>
<td><strong>Maternal Cause</strong></td>
</tr>
<tr>
<td>• Excessive movement/ hyperstimulation</td>
<td>• GA &lt;32/52</td>
</tr>
<tr>
<td>• Intrauterine infection</td>
<td>• Chronic hypoxia</td>
</tr>
</tbody>
</table>

2. **Baseline variability/ Beat to beat variability (BTBV)** is the degree to which the baseline varies within a particular band width excluding acceleration and deceleration. **NORM: 5-25 bpm or >5 bpm**

**How to determine BTBV?**

- BTBV = 0 (silent)
- BTBV < 5 (reduced)
- BTBV = 5-25 (good)
- BTBV >25 (saltatory)

**Calculation:**

Remember!!
- BTBV can be low when: **foetus sleeping** and **drug** introduction to mother but low BTBV should not >30-40 sec
- If BTBV low may indicate **severe hypoxia** (failure to response to stress and changes in venous return due to failure of transmission of impulse thru NS)

3. **Acceleration** = Transient increase of BFHR > 15 bpm for ≥ 15 sec. **NORM: ≥ 2 in 20 minutes (reactive trace).** If very high, indicates foetal tachycardia. Present – due to foetal movement or stimulation; Absent – maybe due to sleeping. Remember: Non reactive period should not >45 min.
4. Deceleration = Transient decrease of BFHR > 15 bpm for ≥ 15 sec. Not significant if other features of heart rate are normal. If deceleration and other abnormal features (s.a. decrease BTBV, baseline tachycardia), indicate foetal hypoxia.

3 main types of deceleration are distinguished:
(a) Early deceleration (b) Late deceleration (c) variable deceleration

(a) Early deceleration = Early in timing with respect to the uterine contraction. Start within 30 sec of onset of contraction and then rapidly return to baseline. Cause: Foetal head compression. Usually seen at late 1st or 2nd stage of labour, when the descent of head is occurring

Features: Peak of deceleration corresponds to each uterine contraction, Bell-shaped symmetrical uterine contraction; Non-symmetrical (FHR), quick restoration to baseline FHR

(b) Late deceleration = Late in timing with respect to the uterine contraction. Cause: decrease uterine blood flow. Usually seen in IUGR foetus.

Features: Uniform in shape and depth, occurring after each peak of contraction. Does not restore fully to baseline until sometime after contraction

(c) Variable deceleration = inconsistent in shape and their relationship to uterine contraction
Most common form and it is always confused with early deceleration. Cause: transient Cord Compression between foetal and maternal tissue during contraction

Relation between Cord Compression & Variable deceleration
Periods:
1- Before contraction
2- Start contraction
3- Increase contraction till maximum
4- Decrease contraction
5- End of contraction

Ψ Small rise of FHR before variable deceleration shows foetus is not compromised.

5. Uterine Contraction – check if presence of contraction >5 per 10 minutes, which indicates hyperstimulation by oxytocin.
### NICE Clinical Guidelines

<table>
<thead>
<tr>
<th>Features</th>
<th>BFHR</th>
<th>BTBV</th>
<th>Deceleration</th>
<th>Acceleration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reassuring</td>
<td>110-160</td>
<td>≥5</td>
<td>None</td>
<td>Present (at least 2 in 20 minutes)</td>
</tr>
<tr>
<td>Non-reassuring</td>
<td>100-109 161-180</td>
<td>&lt;5 for 40-90 min</td>
<td>Early deceleration  Variable deceleration  Single prolonged deceleration up to 3 minutes</td>
<td>The absence of acceleration with an otherwise normal trace is of uncertain significance</td>
</tr>
<tr>
<td>Abnormal</td>
<td>&lt;100  &gt;180 Sinusoidal pattern ≥10 min</td>
<td>&lt;5 for &gt;90 min</td>
<td>Either atypical variable deceleration with over 50% of contraction or late deceleration both for over 30 min  Single prolonged deceleration for &gt;3 min</td>
<td></td>
</tr>
</tbody>
</table>

### RCOG CTG Classification

- **Normal CTG** – all 4 reassuring features met
- **Suspicious CTG** – one of the criteria fall on non reassuring feature, others reassuring features
- **Pathological CTG** - ≥ 2 non-reassuring features OR ≥ 1 abnormal feature

### Interpretation of CTG according to RCOG:

- **Normal** classification of the trace implies the trace assures foetal health
- **Suspicious** indicates that continue observation or additional simple tests are required to ensure foetal health
- **Pathological** warrants some action in the form of additional tests or delivery depending on the clinical pictures

### Summary: Test Yourself ~

![CTG Graph]

**BFHR =**

**BTBV =**

**Acce. =**

**Decel =**

**Conclusion:**
Partogram:

3 components:
- Foetal condition
- Labour process
- Maternal condition

**Foetal condition (access ½ hourly)**
- *Foetal heart rate*
- *Membrane & liquor*
  1. I – intact
  2. C – clear liquor
  3. M – Meconium stained
  4. B – blood stained
  5. A – absence of liquor
  6. AROM – artificial rupture of membrane
  7. SROM – spontaneous rupture of membrane
- *Moulding of foetal skull bone*
  0 – normal
  1 – no overlap, suture felt
  2 – overlap but reversible
  3 – overlap and irreversible

**Labour Process (access 4-hourly)**
- *Cervical dilatation*
  Normal Rate 1cm/hr in active phase
- Descendent of head (/5 palpable)
- *Uterine contraction (½ hourly)*
  Palpate 10 minutes and determine strength
  1. Mild – less than 20 sec
  2. Moderate – 20-40 sec
  3. Strong – more than 40 sec

**Maternal condition**
- 1st part: *General Information*
  1. Name,
  2. Serial number,
  3. Age,
  4. Parity,
  5. Diagnosis,
  6. POA,
  7. Date and Time of Admission to Labour Room
- 2nd part: *Monitoring of:*
  1. Drug, IV fluid, oxytocin (if augmentation of labour)
  2. Pulse, BP – 4 hourly
  3. Temperature – 4 hourly
  4. Urine Volume – catheterisation – 2 hourly
  5. Urine Dipstix – albumin (PE??), sugar (GDM??), Ketones (Dehydration??) – 2 hourly
Part 4: ANTEPARTUM HAEMORRHAGE

**Definition** = Bleeding from the genital tract in pregnancy before the onset of labour at gestations of 22 weeks or beyond

**Etiology**
- Placenta causes: Placenta Praevia, Placenta Abruption, Vasa Praevia
- Local causes: cervical polyps, cervicitis, vaginitis, cervical cancer

**Placenta Praevia**
- **Definition**: Placenta that is implanted partly or entirely in the lower uterine segment.
- **Classification**:
  - Type I: Low placental implantation but the lower edge does not reach the internal cervical os.
  - Type II: The lower placental edge reaches the internal cervical os but does not cover it.
  - Type III: The placenta completely covers the internal os when the cervix is closed, but only partially covers when the cervix is dilated.
  - Type IV: The placenta covers the internal os when the cervix is either closed or dilated.
- **Grades**: Minor I-II a-anterior, Major IIb-posterior, III, IV

**Risk Factors**
- Previous placenta praevia, caesarean section or abortion.
- Previous pregnancies, esp. a large number of closely spaced pregnancies, are at higher risk.
- Women younger than 20 & women older than 30 are at increasing risk as they get older.
- Women with a large placenta from twins or erythroblastosis
- Smoking or cocaine usage
- Placenta accreta (adhere), increta (invade), percreta (penetrate through myometrium)
- Assisted conception
- Uterine structure abnormality

**Placenta Abruption** = Premature separation of normally situated placenta from its uterine attachment prior to 3rd stage of labor.

**Risk Factors**
- Pre-eclampsia
- Abdominal trauma
- Abruptio in previous pregnancy (10 fold increased risk)
- Multiparity
- Multiple gestation (over distention of uterus)
- Cord traction
- Smoking
- Sudden decompression of the uterus
- Maternal Substance Abuse (Cocaine, alcohol)
- Maternal Tobacco abuse (2 fold increased risk)
- Polyhydramnios

**Differences between placenta praevia and placenta abruptio**

<table>
<thead>
<tr>
<th></th>
<th>Placenta praevia</th>
<th>Placenta abruptio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>Painless</td>
<td>Painful</td>
</tr>
<tr>
<td>Uterus</td>
<td>Soft, non tender</td>
<td>Tense, tender, irritable, hard ly palpate fetal parts</td>
</tr>
<tr>
<td>Fetal position</td>
<td>Not engagement, malpresentation</td>
<td>Normal, head maybe engaged</td>
</tr>
<tr>
<td>Fetal heart</td>
<td>Usually normal</td>
<td>Absent or abnormal</td>
</tr>
<tr>
<td>A/w pre-eclampsia</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Haemodynamic signs</td>
<td>Proportional</td>
<td>Signs of hypovolaemic shock with increase pulse rate, hypotension, and peripheral vasoconstriction.</td>
</tr>
</tbody>
</table>

CSMU HOW O&G TEAM
To access the patient-History and General Examination

1. History
   - Severity of the bleeding
   - Time of onset
   - Any provoking factors
   - Associated with pain/uterine activity
   - H(x) of ruptured membranes
   - Previous episodes
   - Fetal movement
   - Cervical smear h(x)
   - Review of previous ultrasound report

2. Resuscitation Measures
   - 2 IV access
   - Crystalloid / Colloid
   - CBD
   - IO chart
   - GXM

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Explanation &amp; reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Quick but thorough history</td>
<td></td>
</tr>
<tr>
<td>2 Vital signs</td>
<td>Estimate blood loss (BP, Pulse)</td>
</tr>
<tr>
<td>3 Palpate abdomen</td>
<td>uterine size, activity, tenderness, presenting, part, lie</td>
</tr>
<tr>
<td>4 Ultrasonography</td>
<td>-fetus viability</td>
</tr>
<tr>
<td></td>
<td>-fetus abnormality</td>
</tr>
<tr>
<td></td>
<td>-location of placenta</td>
</tr>
<tr>
<td></td>
<td>-adequacy of the liquor</td>
</tr>
<tr>
<td></td>
<td>-growth parameters</td>
</tr>
<tr>
<td>5 CTG and foetal heart monitoring</td>
<td>Determines foetal well-being.</td>
</tr>
<tr>
<td>6 No Vaginal examination</td>
<td>ONLY After exclude placenta Praevia first by US!!!</td>
</tr>
</tbody>
</table>

Investigations
- FBC: Check haemoglobin level to rule out anaemia and maintain haemoglobin level above 10g/dL
- Coagulation Profile: APTT, Serum fibrinogen, PT
  Check for any bleeding tendency in this patient due impaired coagulation.
- UFEME
- BUSE

**Conclusion:** History & Physical Examination

- Pain
- Tenderness
- Tense uterus
- Painless
- Soft abdomen
- Non tender

Retroplacental clot
Placenta Abruption
US scan
Speculum & Vaginal Examination

1. Trauma
2. Cervicitis
3. Cervical Polyps
4. Cervical Growth
5. Cervical Fibroid
6. Vasa Praevia
7. Indeterminate
**Conservative Management**

- Admit (according to RCOG is 28 weeks)
- Monitor BP & Pulse rate
- Pad chart
- **Minimise** abdominal examination
- Appropriate investigations are done – FBC & GXM/GSH (2 units)
- Monitor foetal well being
  - Foetal kick chart (daily)
  - CTG (weekly)
  - U/S (fortnightly)
- Steroid injection (>24w, <36w) - IM dexamethasone 12mg stat and repeat the second dose after 12 hours.
- Any symptoms or signs of labour
  - *Placenta Praevia – must deliver by 38 weeks. If baby is dead, do not perform Caesarean section, instead induce & augment labour*
  - *Placenta abruptio – must deliver as soon as possible (within 2 hour)*

In severe AP or when got DIVC, transfuse DIVC regime

**DIVC regime:**
- 4 units FFP1
- 6 units cryoprecipitate
- 2 units platelet concentrate
Management (PA)

1. Resuscitation Measures

• **2.US**

<table>
<thead>
<tr>
<th>Fetus alive</th>
<th>Fetus dead (Delivery)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTG</td>
<td>Cx favourable</td>
</tr>
<tr>
<td>↓ Fetal distress</td>
<td>ARM+</td>
</tr>
<tr>
<td>LSCS or</td>
<td>Syntocinon</td>
</tr>
<tr>
<td>Assisted delivery</td>
<td>(AOL)</td>
</tr>
<tr>
<td>-vacuum</td>
<td></td>
</tr>
<tr>
<td>-forceps</td>
<td>SVD</td>
</tr>
</tbody>
</table>

**Complications on the Mother**

- hypovolaemic shock
- disseminated intravascular coagulation (DIC)
- Acute renal failure
- Postpartum hemorrhage
  - Couvelaire uterus
  - Bleeding into myometrium results in hypotonic wall
  - Risk of Postpartum Hemorrhage
- Feto-maternal hemorrhage
- Maternal mortality
- Recurrence risk higher
- Amniotic fluid embolism

**Complications on the Fetus**

- Perinatal mortality-influenced by size of abruption, interval to delivery, gestational age at which the abruption and delivery have occurred, others factors (growth retardation related to poor placentation)
- Intrauterine growth restriction
- Preterm birth
- Low birth weight

**Vasa Praevia**

-In a normal gestational sac, the umbilical cord is inserted into the middle of the placenta and entirely enclosed in the amniotic sac.

-Velamentous insertion means that the cord is inserted on the amniotic membrane rather than on the placenta with blood vessels stretching along the membrane between the insertion point and the placenta.

- occur when the foetal vessels run in the membranes below the presenting foetal part, unsupported by placental tissue or umbilical cord at the cervical opening
- Spontaneous or artificial rupture of membranes often leads rupture of these vessels with likely resultant foetal exsanguinations (reported foetal mortality 33-100%).
- Must be suspected when APH occurs in a woman especially if, bleed is a bright red trickle.
  - foetal heart shows sudden tachycardia or sudden deceleration (even persistent bradycardia!) and the foetal distress appears disproportionate to the relatively ‘little’ bleed
  - occurs just after ARM
- Antenatal diagnosis can be made using transvaginal sonography in combination with colour Doppler.

**Indeterminate APH:** diagnosis by exclusion of PP, PA, lesion and trauma of genital tract
Part 5: Postpartum Haemorrhage

**Postpartum Haemorrhage** = >500ml blood lost

Early (1°) PPH – in 1st 24 hours
Late (2°) PPH – up to 6 months

Risk factor:
- PIH
- GDM
- Patients on coagulation therapy
- Multiple gestation
- Multiple parity
- Obese patients
- Patients with anaemia

Aetiology:
1° PPH – uterine atony (90%), genital tract trauma, coagulopathy, uterine rupture, uterine inversion
2° PPH – retained product of conception, uterine infection

Clinical signs of PPH
- External haemorrhage – visible vaginal bleeding + anaemic syndrome, severe → **HYPOVOLEMIC SHOCK!!**
- Internal haemorrhage – x visible blood lost, but present signs and symptoms of anaemia

Management!!
**Determine the cause and treat it!!**

1. FBC + cross matching of blood group
2. Massage the uterus
3. Set 2 lines (large gauge – 14 – 16 Fr) on both wrist
4. Ergometrine
5. Empty bladder
6. Check for trauma of the genital tract

According to cause:
- Genital tract trauma
  1. Cervical tear – stitch from apex
  2. Vaginal tear – s/f tear: stitch from the apex
     - Deep tear – EUA, packed – remove after 24 hours and stitching is done
  3. Paravaginal hematoma –
     - Supralevator: laparotomy, CT, TAH (total abdominal hysterectomy)
     - Infralevator: if <5cm and is not expanding → ice packed, vaginal packing and analgesics,
       If >5cm and is expanding → explore and evacuate hematoma, ligate vessels, drain, packed and CBD for 24hours.

- Coagulopathy – correction by transfusion with O- blood, FFP, and anticoagulant therapy should be reversed:
  aspirin with platelets, LMW heparin with protamine and warfarin with vit K or FFP. In DIC – 6 cryoprecipitate + 4 FFP + 2 platelet
- Uterine rupture – incomplete type: repair; complete type: TAH
- Uterine inversion – immediately replace the uterus through the cervix by manual compression using as much of the hand as possible and maintain uterine contraction with an oxytocin.
- Retained product of conception – early: manual extraction of the placenta under anaesthesia; late – blunt curettage
- Uterine infection – antibiotics, uterotonics and antipyretics.

Estimation of blood lost:
- Tampon: 80 ml
- Sarong: 500 ml
- Abdominal pack: 250 ml
- Gauze: 30 – 50 ml
- Pad: 100 ml
- Linen: 300 – 5—ml
- Kidney dish: (portex) 700 ml
  (plastic) 300 ml – small
  500 ml – big
- Gully pot – 100 ml

**Genital tract trauma**

**Perineum tear**
1° - perineal skin and mucosa
2° - 1° + muscles
3° - 2° + external anal sphincter
4° - 3° + rectal wall

**Paravaginal hematoma**

Supralevator – spreads upwards and outwards beneath the broad ligament or partly downwards to bulge into the walls of the upper vagina. Not visible externally, only can be detected by digital examination and laparotomy.

Infralevator – includes those of vulva and perineum, as well as those occurring in ischiorectal fossa.

Massive swelling and ecchymosis of the labia, perineum and lower vagina on the affected side, and may extend to the buttock. Anorectal tenesmus may result from extension into ischiorectal fossa, and urinary retention may succeed spread ventrally into the paravasal fossa.
List of drugs available for haemostasis in PPH
1. Syntometrine (i/m) : oxytocin 5 units + ergometrine 0.5 mg (long acting)
   c/i: HPT and cardiopathy
2. Syntocinon (i/v) : oxytocin 10 units (short acting)
   40 units in 1 pint over 4 hours, 125 ml/hr
3. Hemabate (i/m) : PGF2α

If 3 times syntometrine (fail) → give hemabate up to max 8 times, every 15 min (fail) → tamponade or balckmore tube/rusch catheter (fail) → hysterectomy

ALWAYS MONITOR VITAL SIGNS & SIGNS INDICATING SHOCK!

Prevention is better than cure!!

Active 3rd stage management to prevent PPH
1. Identify risk factors.
2. Early cord clamping.
3. Control cord traction.
4. Administration of syntometrine (i/m)
5. i/v syntocinon.
6. Massage uterus.
7. Set 2 lines (large bore).
Part 6: Hypertensive Disease in Pregnancy

Definition:

- BP of 140/90 mmHg or more taken on 2 occasion at least 4 hour apart; OR
- An increase in systolic BP of 30 mmHg or/and diastolic BP of 15 mmHg compared to pre-pregnancy level
- Single reader of Diastolic BP more than 110mmHG.

CLASSIFICATION

1) GESTATIONAL HYPERTENSION
   - Is hypertension after 20th week of gestation in a previously normotensive woman
   - No proteinuria
   - Condition return to norm within 6 weeks after labour

2) PRE- ECLAMPSIA

<table>
<thead>
<tr>
<th>Mild PE</th>
<th>Severe PE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBP Increase &gt; 30mmHg @ &gt;140mmHg</td>
<td>&gt; 160mmHg</td>
</tr>
<tr>
<td>DBP Increase &gt; 15mmHg @ &gt;90mmHg</td>
<td>&gt;110mmHg</td>
</tr>
<tr>
<td>Proteinuria &lt;2.0g/day</td>
<td>&gt;5.0g/day</td>
</tr>
</tbody>
</table>

3) CHRONIC HYPERTENSION
   - Presence of hypertension of at least 140/90 mmHg before 20th week of pregnancy or beyond 6 weeks postpartum.
   - Includes essential & secondary hypertension.

4) CHRONIC HYPERTENSION WITH SUPERIMPOSED PRE-ECLAMPSIA
   - Development of pre-eclampsia in patient with pre-existing hypertension
   - Criteria used should include:
     ✓ worsening of hypertension
     ✓ proteinuria
Management:

Antenatal:
1. Identify risk factor and observe BP:
   - Primigravida
   - 40yo
   - Chronic hypertension
   - Chronic renal disease
   - Multiple pregnancy
   - Past history or family history of pre eclampsia or eclampsia
   - Excessive weight gain

2. Physical examination, urinanlysis, BP

3. Confirm Diagnosis:
   - Mild PIH
   - Severe PIH, PE
   - Outpatient
   - Admission

Outpatient management:
   - Antenatal clinic visit:
     - every 4 weeks if not on treatment, norm biophysical profile, good foetal growth
     - every 2 weeks if on treatment
   - Tests:
     - urinalysis (protein)
     - BP
     - SFH and liquor vol.
     - BUSE, FBC, Serum uric acid
   - Fetal surveillance: US monthly, FKC

Inpatient/Admission:
   - BP every 4 hrs
   - SFH and liquor vol.
   - Daily PE chart, urine protein
   - FBC, BUSE, serum uric acid
   - LFT, Coagulation profile (if suspected HELLP)
   - I/O chart
   - Fetal surveillance: - FKC, CTG, US
     - Antihypertensive agents only used if DBP > 100mmHg, (aim: maintain 90-100mmHg)
     - Dexamethasone if early delivery expected (<34 weeks)

Intrapartum management:
   - BP/pulse rate half hourly
   - To continue oral antihypertensive treatment
   - Strict I/O chart
   - Adequate analgesia (preferable epidural analgesia)
   - CTG monitoring
   - Shortened 2nd stage-assisted delivery, episiotomy
   - X syntometrime/ergometrine!
   - Use Syntocinon 10 units
**Postpartum management**
- Beware of Sx of IE and pulmonary oedema
- BP monitoring
  - 1/2hourly monitoring for at least 2 – 4hours before sending to postnatal ward
  - 4 hourly monitoring in the ward for 24 – 48hours before discharge
- Antihypertensive should be continued and stopped later on postnatal review. (methyldopa discontinue \(\rightarrow\) can cz postpartum depression)
- I/O chart
- Daily urine albumin, PE chart

**Criteria for discharge:**
- Asymptomatic
- BP< 140/90mmHg
- Reflexes not brisk
- Urine albumin- nil
- Mono-antihypertensive therapy
- Review patient in 2 weeks and 6 weeks

**ANTI-HYPERTENSIVE MEDICATION**

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Mode of Action</th>
<th>Start dosage (mg/day)</th>
<th>Max. Dosage (mg/day)</th>
<th>Adverse effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyldopa</td>
<td>Caztrallyacting</td>
<td>250 TDS</td>
<td>3000</td>
<td>Depression, drowsiness, lupus-like syndrome</td>
</tr>
<tr>
<td>I abetolol</td>
<td>(\beta)-blockers</td>
<td>100 TDS</td>
<td>2000</td>
<td>Heart block, IUGR, hypogly cemia, bronch oconstriction</td>
</tr>
<tr>
<td>Nifedipine</td>
<td>CCB</td>
<td>16 TDS</td>
<td>60</td>
<td>Headache, flushing</td>
</tr>
<tr>
<td>Hydralazine</td>
<td>Vasodilator</td>
<td>25</td>
<td>300</td>
<td>Tachycardia, hypotension</td>
</tr>
</tbody>
</table>

**AIM:** to keep diastolic BP between 90-100mmHg!
**ECLAMPSIA**

- Pregnancy induced hypertension with generalized tonic clonic fits
- OBSTETRICAL EMERGENCY!
- Aim of management:
  - Control convulsion
  - Control blood pressure
  - Stabilize patient
  - Delivery

**Management**

- 4 subsections:
  - *(A) Resuscitation and general management*
  - *(B) Anticonvulsive therapy*
  - *(C) Antihypertensive therapy*
  - *(D) Delivery*

**(A) Resuscitation and General**

1. Left lateral position, 2 IV lines
2. Maintain airway, O₂ mask
3. Abort fit by- MgSO₄ loading dose = 4g IV bolus over 10-15 min

   = 5g IM each buttock (10g)

   * (1 amp: 5ml – 2.5g MgSO₄)

   * 8ml- 4g (dilute in 12ml NaCl water → 20ml)

   OR

   Diazepam IV 10mg bolus (1-2 min)

4. After fit aborted- GXM, Coagulation profile, renal profile, platelet count.
5. Asses level of consciousness & neurological status
6. Closely monitor V/S- BP, PR, SPO₂, RR, I/O chart

**(B) Anticonvulsive therapy**

1. MgSO₄ → Maintenance dose:

   - *IV infusion of 1g/hour

   * 5ml MgSO₄ + 45ml 5% Dextrose sol

   → Infuse at 20ml/hour (syringe pump)

   OR

   * 10ml MgSO₄ in 500ml D5% at 33 dpm (drips)

✓ Duration: - continue for 24 hours after last fit or after delivery
✓ Monitoring for MgSO₄ therapy:

1. Investigations:
   - BUSE, FBC
   - Serum Ca²⁺, Mg
   - Renal function test (urea, uric acid, creatinine)
   - Coagulation profile
   - UFEME
   - ECG
   - GXM
2. STOP!!! If present **signs of Mg toxicity:**
   → (a) RR < 16/min
   → (b) Urine output < 25ml/hr
   → (c) Patellar reflex absent
   → (d) Serum Mg > 3.5mmol/L (therapeutic range: 1.7-3.5)
   → (e) BP < 90/60 mmHg

3. Antidote: Ca gluconate 10%-10ml

(C) Antihypertensive therapy
   • initiate parenterally if BP > 160/110mmHg

(D) Delivery:
   ✤ Definite treatment
   ✤ within 6hrs after mother is stabilised
      → If cervix favourable, cephalic: assisted SVD
      → If cervix not favourable: LSCS
   ✤ Paediatrician informed n present at delivery
   ✤ Syntocinon!!!
Part 7: Diabetes Mellitus in Pregnancy

A metabolic disorder of multiple aetiologies characterized by chronic hyperglycemias with disturbance of carbohydrate, fat and protein metabolism resulting from defects of insulin secretion, action or both

**GESTATIONAL DIABETES MELLITUS**

- Development of diabetes for the first time during pregnancy
- Raised blood glucose level >7.0 mmol/L or >11.1 mmol/L 2 hours post-prandial OGTT

**Risk Factors**
1. Gestational diabetes previous pregnancy
2. Obesity (BMI >30)
3. Age > 35
4. Presence of glycosuria in >2 occasions
5. History of DM in first degree relatives
6. Previous big baby > 4.0 kg
7. Previous history of recurrent abortion or unexplained stillbirth
8. Previous congenital anomalies
9. Polyhydramnios

**Complication in GDM**

<table>
<thead>
<tr>
<th>Maternal</th>
<th>Fetal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nephropathy</td>
<td>Congenital abnormalities: cardia and neural tube defect</td>
</tr>
<tr>
<td>Retinopathy</td>
<td>Macrosomia</td>
</tr>
<tr>
<td>Coronary artery diseases</td>
<td>RDS</td>
</tr>
<tr>
<td>Hyperglycemia / hypoglycemia /ketoacidosis</td>
<td>Hypoglycemia</td>
</tr>
<tr>
<td>Pre-eclampsia</td>
<td>Polycythemia</td>
</tr>
<tr>
<td>Infection</td>
<td>Hyperbilirubinemia</td>
</tr>
<tr>
<td>TE</td>
<td></td>
</tr>
</tbody>
</table>

**Management of diabetes in pregnancy !!!**
- Pre-pregnancy counselling.
- Combined diabetic-antenatal clinic.
- Dietary advice.
- Routine antenatal care.
- Ultrasound : early for dating
  - : detailed TRO foetal abnormality
- Insulin therapy.
- Monitoring.

**SCREENING FOR DIABETIC IN PREGNANCY...**

- After 12-14 weeks gestations as soon as the risk factors are identified.
- In women whose GTT is normal but have significant risk factors, a repeat test must be perform at 24-28 weeks gestation and again at 32-34 weeks gestation.

**MOGTT PROCEDURE**
1. Fasting from 12am till the next morning
2. Take blood.
3. Give patient to drink 75g glucose+ 250ml water ,drink in 10-15min.
4. After 2 hrs, take blood again.
### DIAGNOSIS OF DM IN PREGNANCY

<table>
<thead>
<tr>
<th></th>
<th>Normal (mmol/L)</th>
<th>Impaired glucose tolerance (mmol/L)</th>
<th>Diabetes (mmol/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fasting</strong></td>
<td>&lt; 6.0</td>
<td>6.0 – 7.9</td>
<td>&gt; 8.0</td>
</tr>
<tr>
<td><strong>Or</strong></td>
<td></td>
<td>And</td>
<td>And/or</td>
</tr>
<tr>
<td><strong>2 hours</strong></td>
<td>&lt; 8.0</td>
<td>8.0 – 10.9</td>
<td>&gt; 11.0</td>
</tr>
</tbody>
</table>

**Antenatal care**

*Aim: to maintain blood glucose level at 4-6mmol/L*

**Glucose control**

- **Dietary Control (D/C) - by dietitian**
  
  *(Requirement: 30 – 35 kcal/kg per day for non-obese and 25kcal/kg per day for obese patient)*

  **OHA is not recommended due to:**
  
  - possible teratogenic effect
  - difficult to establish tight control

- **Insulin Therapy**
  
  1. FBS > 5.8mmol/L
  2. 2 hour post-prandial >7 mmol/L
  3. **failed D/C** (start insulin after 2 weeks on diet control(IV) )
  4. **foetal macrosomia (AC > 95th centile)** between 29 – 33 week gestation despite good glycaemic control

- **Require 3 or 4 daily doses of insulin.**
- **2 forms of insulin used in combination:**
  - Short acting : actrapid, humulin r given before meals
  - Long acting : monatard, humulin l given before bed
  *educate the pt about correct way of insulin injection.

- **Foetal supervision with ultrasound for growth and well being - usually every trimester.**

**Assessment for GDM patient**

*Maternal-*

- BSP
- HbA1c
- Renal profile (pre-existing)
- Home monitoring
- Early detection of complication.

*Foetal*

- Ultrasound
- Biophysical profile
- CTG
- Foetal kick chart
**Blood Sugar Profile**

- **BSP- Blood Sugar Profile**
- **Do before starting and also to monitor insulin therapy**
- **4 times**
  - pre-breakfast
  - pre-lunch
  - Pre-dinner
  - Pre-bed time

**Normal range- 4-6 mmol/L**

If on Insulin therapy: BSP every 2 weeks  
If on D/C: BSP every 4 weeks
  - fasting < 5.5 mmol
  - pre-meals level of 4-6mmol/L
  - 2-hour postprandial capillary level < 7.0 mmol/L

**HbA1c**
- 3 month control
- level < 7%

**Timing for delivery**
- If on insulin- terminate by 38th week
- If on D/C – can prolonged till 40th weeks
- DO NOT EXCEED DUE DATE!!!

**Mode of Delivery**
- Aim for SVD!!
- C-Section if:
  - Macrosomia
  - Suspicion of Cephalo-Pelvic Disproportion (CPD)
  - A previous caesarean section
  - Malpresentation
  - Polyhydramnion
  - Evidence of foetal compromise
  - Bad obstetric history
  - Poor diabetic control

**Management in labour**
- Mother admitted to LR  NBM
- Omit morning dose of insulin injection.
- GSH, 2 units
- Hourly glucometer monitoring
- 4 hourly BUSE, RBS
- pain relief – epidural is ideal
- monitor foetal heart closely, CTG
- Capillary blood sugar on admission and follow sliding scale:
Sliding scale regime

<table>
<thead>
<tr>
<th>DEXTROSTIX</th>
<th>INSULIN INFUSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 4 mmol/L</td>
<td>To inform registrar start (IV bolus 10ml dextrose 50% if &lt;2mmol/L)</td>
</tr>
<tr>
<td>4-6.9mmol/L</td>
<td>Omit insulin</td>
</tr>
<tr>
<td>7-9.9mmol/L</td>
<td>1 unit/hour</td>
</tr>
<tr>
<td>10-12mmol/L</td>
<td>2 unit/hour</td>
</tr>
<tr>
<td>&gt;12mmol/L</td>
<td>Inform registrar (change to Hartmann with 3 unit/hour &amp; ½ hourly dextrostix monitoring until 11 mmol/L is achieved, then change back to standard regime).</td>
</tr>
</tbody>
</table>

Preparation of Glucose-Insulin-Kalium regime (GIK)
- A constant infusion of 500ml of 5% dextrose water 100ml/hour
  1. Baseline BUSE should be traced within ½ hour admission to labour room. K+ level should be checked prior to commencing KCl infusion.
  2. KCl is added into dextrose sol(13mmol, 1 ampoule of KCl)
  3. Separate infusion insulin such as 50 units Actrapid in 49.5ml normal saline is maintain
  4. Important to ensure infusion is separated from Syntocinon infusion. Do not override with Syntocinon infusion.

Post-partum...
- If GDM, off all insulin and repeat MOGTT at 6 weeks following delivery

If known diabetic, on insulin or oral hypoglycaemic, start back their pre-pregnancy dose the next day when taking normal diet.
Reference book list:

1. Ten Teachers
2. A practical approach to O&G Problems for the undergraduate – by Prof. Kulenthran Ammugam
3. Manual of Obstetrics (by ELSEVIER) - by Daftary & Chakravati
4. Textbook of O&G – by D.C Dutta (CENPRAL)
5. Illustrated O&G (by Churchill Livingstone)

10 THINGS THAT H.O. MUST KNOW ABOUT OBSTETRIC

1. Normal Pregnancy + normal labour + fetal monitoring
2. Abnormal lie & Breech presentation & CPD
3. Hypertension Disease in pregnancy - PIH, PE, IE, Eclampsia
4. GDM
5. APH - PP, PA
6. PROM, PPROM
7. Preterm Labour
8. Post-date pregnancy
9. PPH – Uterine atony, Retained placenta, Trauma, Coagulation defect
10. Obstetrical emergency - cord prolapsed, uterine inversion, shoulder dystocia, uterine rupture, uterine inversion

10 THINGS MUST KNOW ABOUT GYNAECOLOGY

1. Abortion
2. Ectopic pregnancy
3. Disorder of menstruation
4. Trophoblastic disease
5. Gynae Malignancy, cysts
6. Endometriosis
7. PID
8. Abnormal PVB
9. Hyperemesis gravidarum
10. Menopause

PROTOCOLS AND BOOKS:

1. Klang hospital protocol *
2. Sg. Petani, Kedah hospital protocol *
3. Kuala Terengganu HSNZ protocol
4. Ampang hospital protocol (e-variant) *
5. USM hospital protocol
6. Tanjung Karang hospital protocol
7. Kajang Hospital protocol
8. Selayang hospital labour room guideline
9. Seri Manjung Antibiotic Usage Guideline
10. C TG (Traces of you) *
11. HTAR Klang hospital Abbreviation & Symbols list

*this book has a scanned variant which is included in the DVD.