

# OBSTETRICS & GYNAECOLOGY REVISION NOTES

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**POLYCYCSTIC OVARY SYNDROME**

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- ❖ Causes oligomenorrhoea or amenorrhoea usually lasting more than 6 weeks, but less than 6 months.
- ❖ Clinical features:
  - Delayed menarche
  - Oligomenorrhoea anytime after puberty (amenorrhoea in 26%)
  - Preceded by an ↑ weight
  - Hyperandrogenism → seborrhoea, acne and hirsutism (unwanted hair)
  - USS shows large ovaries and echo-dense central stroma
- ❖ Endocrine features:
  - Failure to convert androgens into oestrogens within theca and interstitial cells of hyperplastic ovarian stroma
  - ↑ LH and ↑ androgens with normal levels of FSH, prolactin and thyroxine
  - Persistent ↑ LH impairs developing oocytes → infertility (even if ovulation is induced by pharmacological methods)
  - Peripheral conversion of androgens to oestrones occur in adipose tissue
  - Results in FSH inhibition → persistent anovulation and lack of progesterone
  - Oestrones from fat have an unopposed action on the uterus → ↑ risk of malignancy
- ❖ PCO is associated with insulin hypersecretion, often seen visibly as *acanthosis nigrans*
  - Insulin receptor signalling defect
  - Circulatory autoantibodies cross-reacting with the extra-cellular domain of insulin receptors
  - A post-receptor defect ← commonest and associated with obesity
  - Insulin and insulin-GF1 receptors are present in the ovaries, and sensitise ovaries to gonadotrophins ... perpetuates PCO
  - Insulin inhibits testosterone binding globulin → results in low or normal levels of testosterone, in the face of hirsutism ... need to measure free, unbound testosterone.
  - Insulin lowers HDL<sub>2</sub> by altering the lipid profile within the body → ↑ risk of CHD, hypertension and diabetes.

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**ABDOMINAL PAIN IN EARLY PREGNANCY**

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- ❖ Retroverted uterus with adhesions – prevents uterus from spreading into the abdominal cavity, and associated with AROU
  
- ❖ Fibroids
- ❖ Ectopic pregnancy
- ❖ Torsion of tubes
- ❖ Stretching of pelvic ligaments at 16-20/40
- ❖ Abortion
- ❖ Ovarian tumours
- ❖ Hyper-emesis
  
- ❖ Cholecystitis / Cholestasis (2° ↑ oestrogens)
- ❖ Bowel volvulus
- ❖ Small bowel colic
- ❖ Pyelonephritis
- ❖ Appendicitis

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**ABDOMINAL PAIN IN LATE PREGNANCY**

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- ❖ Uterine contractions
- ❖ Placental abruption
- ❖ Pregnancy induced hypertension
  
- ❖ Pelvic Arthropathy
  - *Relaxin* allows relaxation of pelvic ligaments and separation of pubic Symphysis
  - ? A systemic side-effect in overweight ♀
  
- ❖ Rectus Haematoma
  - Anterior abdominal wall stretched by uterus
  - Rupture of inferior epigastric veins
  - Haematoma confined within the rectus sheath
  - Pain worse on movement – °hypovolaemia
  - Conservative Rx after Dx by USS

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**ECTOPIC PREGNANCY**

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- ❖ Results in 10% of all maternal deaths in the UK.
- ❖ Causes:
  - Fibrosis or damage to the cilia in the Fallopian tubes, after salpingitis.
  - IVF
  - IUD or progestogen-only pill
  - Tubal surgery + sterilisation reversal
  - Endometriosis
  - Post-partum or post-abortion infection
  - TB
  - ↓ grade PID
  - Congenital abnormality of the upper Mullerian Duct (this forms the Fallopian Tube)
- ❖ Most common sites are:
  - Ampulla and isthmus of the Fallopian tubes (95%)
  - Corneal angle of the uterus
  - Ovary
  - Cervix
  - Abdominal cavity
- ❖ Differential Dx includes:
  - PID
  - Ruptured corpus luteum
  - Torsion of an ovarian cyst.
- ❖ Intact ectopic pregnancy symptoms:
  - Lower abdominal tenderness
  - Discomfort on one side
  - Vaginal bleeding.
- ❖ Laparoscopy if diagnosis unclear → open conversion for salpingectomy, or to remove pregnancy
- ❖ Untreated, there are 3 outcomes to a tubal pregnancy:
  - *Tubal mole* – ovum separate surrounded by a blood clot; may be re-absorbed or expelled as a tubal abortion.
  - *Tubal abortion* – ovum separates and passes from the fimbriated end into the peritoneal cavity. BEWARE: ovum may re-implant on external surface of the uterus.
  - *Tubal rupture* – the trophoblast erodes the wall of the tube, causing severe haemorrhage.
    - Sudden onset severe pain and vaginal bleeding
    - Referred shoulder pain, from sub-diaphragmatic irritation
    - Pallor and signs of shock; distended abdomen from bleeding
    - Often preceded by skipped periods and tenderness/tingling in breasts.
    - Rx: fluid resuscitation and emergency surgery.
- ❖ If  $\square$  HCG > 1000, the foetus should be visualised in the uterus by USS. If not, then suspect an ectopic pregnancy.

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**PV BLEEDING IN PREGNANCY**

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- ❖ Miscarriage / abortion \* needs USS
  - Bleeding > pain
  - Beware infection with *Strep. faecalis* or *E. coli*, DIC, anaemia and hypovolaemia
  - *Threatened\** – foetus viable, os closed
  - *Missed\** – dead foetus, os closed
  - *Inevitable* – dead foetus, os open (an acute medical emergency)
    - Analgesia
    - IV fluids and X-match blood
    - Removal of cervical contents, if easy access on speculum
    - Otherwise give **ergometrine** i.m. or i.v. or perform an evacuation under anaesthesia.
  - *Incomplete* – no foetus, os open
  - *Complete\** – no foetus, os closed
  - *Septic*
- ❖ Ectopic pregnancy
  - Pain > bleeding
  - Perform pregnancy test
  - USS shows an empty uterus; ? adnexal mass
- ❖ Hydatiform Mole
  - Benign trophoblastic disease; 1 in 2000 (↑ incidence in Chinese population)
  - Cystic enlargement of ovaries is common 2° to □ HCG secretion from molar tissue
  - < 10% have malignant gestational choriocarcinoma; R<sub>x</sub> is **methotrexate**
- ❖ Salpingitis

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**CAUSES OF MISCARRIAGE**

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- ❖ Chromosomal abnormalities (and polyploidy)
- ❖ Immunological rejection
  - 30%
  - Couple share too much HLA → trophoblast does not produce enough maternal blocking antibodies
  - *or* Antiphospholipid Syndrome → placental thrombosis and decidual vasculopathy
- ❖ Cervical incompetence – spontaneous abortion at 13-27 weeks
- ❖ Uterine abnormalities – poor median blood supply; Ascherman's disease (fibrosis)
- ❖ Maternal disease – hypertension, renal disease, infection (rubella, toxoplasma, listeria, CMV)
- ❖ Endocrine □ – diabetes, hyperthyroid, ? ↓ progesterone from corpus luteum

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**NORMAL LABOUR**

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- ❖ From 30 weeks, the uterus has practice contractions that are usually non-painful
  - Braxton-Hicks contractions; 15 mmHg (cf. labour pressure of 60 mmHg)
- ❖ Normal labour occurs anytime after 37 weeks gestation
  - Should result in spontaneous vaginal delivery within 24 hours of regular contractions
  - Often heralded by a *show* = a plug of cervical mucus and blood as the membranes strip from the os → the membranes may then rupture.
- ❖ 1<sup>st</sup> Stage of Labour:
  - Time of onset of regular contractions, until the cervix is fully dilated (no cervix felt around head)
  - Cervix initially *effaces* (shortens and softens) before in dilates.
  - Rate of dilation is usually 1 cm/hour; 12 hours in a primip, and 7.5 hours in a multip.
  - Assess maternal TPR and contractions every 15 mins
  - 3-4 contractions per 10 mins, lasting up to 60 seconds
  - Vaginal examinations (4 hourly), to assess cervical dilatation, position and station of head
  - Test urine for protein and ketones every 4 hours; if ketotic give 10% i.v. dextrose
- ❖ 2<sup>nd</sup> Stage of Labour:
  - From complete cervical dilatation until the baby is born
  - Mother will wish to push, and use the Valsava manoeuvre
  - As the head descends, the perineum stretches and the anus gapes.
  - Normal time is 45-120 minutes in a primip; 15-45 mins in a multip
  - Use pressure of the perineum to allow tissues to stretch to accommodate head
    - Minimises trauma to the birth canal
    - And precipitate delivery (with intra-cranial bleeding of the newborn)
  - *Head rotates at the level of ischial spines so the occiput lies in the anterior pelvis, before crowning of the head → once head is born, shoulders rotate internally and head rotates externally (restitution) → downward traction to birth anterior shoulder → upward traction to birth posterior shoulder*
  - Delay clamping of umbilical cord by 30 seconds results in ↑ haematocrit levels, and ↓ transfusion need in premature babies.
- ❖ 3<sup>rd</sup> Stage of Labour:
  - Delivery of the placenta; cord retraction with supra-pubic pressure to guard the uterus.
  - As the uterus contracts to a 20 week size after the baby is born, the placenta separates from the uterus, through the plane of the spongy *decidua basalis*
  - Signs of separation:
    - Cord lengthens
    - Rush of blood from the vagina (retro-placental haemorrhage)
    - Uterus rises and contracts
  - **Syntocinon** (4-5 minutes onset) or **syntometrine** (1 minute onset; ergometrine + oxytocin) is given IM to the mother, as the anterior shoulder of the baby is born.
    - Decreases the incidence of post-partum haemorrhage
    - May cause problems for undiagnosed twins.
  - Always check the placenta for smooth membranes and fully complete. Placental remnants or succenturiate lobes in the uterus can cause post-partum haemorrhage and pain, as the uterus continues to contract.

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**DYSTOCIAS**

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- ❖ Dystocia = difficulty in labour
- ❖ The ideal pelvis has a round brim (gynaecoid); 15% ♀ have long oval brim (anthropoid)
  - Flat brim (platypoid) is less favourable; 30% in ♀ shorter than 5 ft.
  - Spinal scoliosis, kyphosis, spondylolisthesis and pelvic fractures affect pelvic anatomy.
  - Suspect pelvic contraction if the head is not engaged by 37 weeks, in a Caucasian primip.

CERVICAL DYSTOCIA:

- ❖ Failure of cervical dilatation due to previous trauma, cone biopsy or cauterisation
- ❖ Difficult to distinguish from failure to dilate due to uterine dysfunction; this responds to oxytocin
- ❖ R<sub>x</sub> for cervical dystocia is caesarean section

BREECH PRESENTATION:

- ❖ 40% at 20 weeks; 25% at 32 weeks; only 3% by term.
- ❖ Predisposing factors:
  - Contracted pelvis
  - Bicornuate uterus; fibroid uterus
  - Placenta praevia
  - Oligohydramnios
  - Spina bifida
  - Hydrocephalic foetus
- ❖ Extended breech most common – flexed hip and extended knees, buttocks presenting
- ❖ Flexed breeches – sit with hips and knees flexed; presents buttocks, feet & ext. genitalia.
- ❖ Footling breeches – least common and 5-20% risk of cord prolapse; feet are presenting.
- ❖ Mother may complain of pain under ribs
- ❖ Diagnosis is in antenatal clinic:
  - longitudinal lie
  - no head felt in pelvis
  - smooth round mass (head) can be balloted in the fundus  
*feels like quickly sinking an apple in a bowl of water*
- ❖ R<sub>x</sub>:
  - External cephalic version (forward somersault)
  - Caesarian section
  - An assisted breech delivery using forceps to deliver the head (beware hip dislocations, Klumpke's paralysis and signs of CNS injury)

CORD PROLAPSE:

- ❖ Risk of cord compression and consequent foetal asphyxia
- ❖ ↑ incidence in twin deliveries, footling breech deliveries, and with shoulder presentations
- ❖ If cord presentation noted prior to membrane rupture → Caesarean section
- ❖ Management:
  - Prevent presenting part from occluding the cord
  - Displace the presenting part by putting a hand into the vagina; push cord back up during contractions
  - Use gravity (e.g. head down, or kneeling forward and down)
  - Infuse 500ml of saline into the bladder through a size 16 catheter
  - Keep cord in vagina: do not handle it (to prevent spasm)
- ❖ If fully dilated and presenting part is sufficiently low, when cord prolapse noted, deliver with forceps (if cephalic), or by breech extraction. Otherwise perform Caesarean section.

SHOULDER DYSTOCIA

- ❖ Inability to deliver the shoulder, after the head has been delivered; danger of asphyxia
- ❖ Association:
  - Large foetus ← poorly controlled maternal diabetes
  - Post-mature baby
  - Short cord
- ❖ H – call for senior help  
 E – evaluate for episiotomy  
 L – place in lithotomy position to increase pelvic outlet; McRoberts position of legs  
 P – supra-pubic pressure  
 R – rotate  
 R -
- ❖ Check the baby for damage: e.g. Erb's palsy or a fractured clavicle

MECONIUM-STAINED LIQUOR

- ❖ Normal for babies to pass meconium in pregnancy – stains amniotic fluid dull green
- ❖ Fresh meconium during labour is a response to stress, or a sign of foetal distress
  - Fresh meconium is dark green, sticky and lumpy
  - Aspiration can cause severe pneumonitis
- ❖ As the head is born, suck out the oropharynx and nose
- ❖ Have a paediatrician at hand to suck under direct vision of a laryngoscope.



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**CAESAREAN SECTION**

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- ❖ 5-13% of all labours; maternal mortality around 0.03%
- ❖ Use a lower uterine segment incision to prevent future uterine rupture and allow better puerperal healing; incision is extra-peritoneal → reduced risk of infection
- ❖ Classical vertical incision only rarely used if there is a transverse lie, with ruptured membranes and draining liquor, or if a structural abnormality makes lower segment use impossible (e.g. constriction ring present, fibroids, abnormally vascular placenta praevia)
- ❖ Neutralise stomach acid with 20ml 0.3M **sodium citrate**, and promote gastric emptying with **metaclopramide** 10mg i.v.
  - Not enough time for H<sub>2</sub>-antagonists to be effective
  - Ranitidine reserved for elective sections.
  - Stomach emptied prior to extubation to minimise aspiration
    - *Mendelson's Syndrome* – cyanosis, bronchospasm, pulmonary oedema and tachycardia. Clinically difficult to distinguish from cardiac failure, or amniotic fluid embolus and consequent DIC and haemorrhage.
    - R<sub>x</sub>: head down tilt, aspirate pharynx & bronchoscopy, 100% oxygen, antibiotics, 1g **hydrocortisone** i.v. stat, with 5mg/kg **aminophylline** slow iv-infusion.
- ❖ Always cross match 2 units of blood; use a 15° left-sided tilt.
- ❖ Halothane is never used to induce anaesthesia since it causes uterine muscle relaxation and increased haemorrhage.
- ❖ Elective Sections:
  - Known cephalo-pelvic disproportion
  - Placenta praevia; more common after previous C-section.
  - Footling presentation
  - After previous vaginal surgery (e.g. sub-urethral repair, fistula repair)
  - Herpes, HIV infection.
- ❖ Emergency Sections:
  - Severe pre-eclampsia
  - Abruption
  - Fœtal distress
  - Prolapsed cord
  - Failed induction or failure to progress.
- ❖ Post-operatively:
  - Antibiotic prophylaxis with 2g **Cephadrine** at induction, and 1g at 6h and 12h post-op.
  - In Rh-ve mothers, remove all excess blood from the peritoneal cavity
  - Use a Kleihauer test to estimate volume of foetal cells in maternal circulation
  - Give 500 units of anti-D for every 4ml of foetal cells
  - Consider pre-discharge radiographic pelvimetry, if cephalo-pelvic disproportion was indication for C-section.
- ❖ Complications:
 

|   |   |
|---|---|
| <ul style="list-style-type: none"> <li>➤ Post-partum haemorrhage</li> <li>➤ Retained placental tissue</li> <li>➤ Ureter trauma</li> </ul> | <ul style="list-style-type: none"> <li>➤ Vesico-uterine fistula</li> <li>➤ Foetal injury (e.g. fracture)</li> <li>➤ Colon injury</li> </ul> |
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**AMNIOTIC FLUID**

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- ❖ Made by amniotic cell secretion, and maternal filtrate.
  - Abnormal levels, if not enough to swallow...
  - ...or too much preventing foetal urination.
  - 30ml by 10 weeks, 300ml by 20 weeks
  - maximal volume of 800-1000 ml by 34-38 weeks; thereafter reduces by 150ml per week
  
- ❖ Oligohydramnios – liquor volume < 200ml, associated with:
  - Prolonged pregnancy
  - Prolonged membrane rupture
  - Placental insufficiency
  - Renal agenesis or urethral aplasia
  - Potter's syndrome:
    - foetal low set ears, renal agenesis, hypoplastic lungs & amnion nodosum  
(clumps of foetal squames)
  
- ❖ Polyhydramnios – amniotic fluid > 2-3 litres; 1 in 250 pregnancies
  - Foetal causes (50%)
    - Anencephaly (no swallowing reflex)
    - Spina bifida
    - Umbilical hernia
    - Ectopia vesicae
    - Oesophageal/duodenal atresia
    - Hydrops foetalis
  - Maternal causes
    - Diabetes (20%)
    - Multiple pregnancy

- Maternal symptoms in the 3<sup>rd</sup> trimester – SOB, oedema, abdominal girth > 100cm
- Predisposes to:
  - Premature labour
  - Malpresentation, cord prolapse
  - Placental abruption when membranes rupture
  - PPH, since uterus does not contract well
- 25 mg **Indomethacin** QDS reduces foetal urine production, so can treat polyhydramnios – foetal urine production returns to normal, 24 hours after stopping.
- Check early for cord prolapse during labour, and pass an NG-tube after delivery to ensure oesophagus is patent.

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**PREMATURITY**

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- ❖ Premature infants are born < 37 weeks gestation
  - 6% singletons
  - 46% twins
  - 79% triplets or higher.
  - About 2% of premature deliveries are before 32 weeks, where neonatal risks are high.
  
- ❖ The causes vary:
  - 25% elective delivery
  - 10% multiple pregnancy
  - 25% APH, cervical incompetence, anionitis, uterine □, diabetes, polyhydramnios, pyelonephritis and other infections.
  - 40% unknown – ? abnormal genital tract colonisation (*Mycoplasma hominis* and *ureaplasma*)
  
- ❖ Problems in the prematurity:
  - The lungs of the neonate are not fully developed, and do not produce enough surfactant.
  - Intrauterine infection after premature membrane rupture (10% within 48h, 26% by 72h, and 40% >72h)
  
- ❖ Management:
  - In 50% contractions cease spontaneously, or if cause treated (e.g. pyelonephritis)
  - Prophylactic i.v. antibiotics
    - **Ampicillin** 500mg QDS, **netilmicin** 150mg BD
    - May delay labour
  - Tocolysis – drugs used to suppress contractions
    - Unlikely to work if membranes ruptured, or cervix dilated to >4 cm
    - Relative c/i = pre-eclampsia, placenta praevia, abruption, IGR, foetal distress, or maternal h<sub>x</sub> of supra-ventricular tachycardias (e.g. WPW syndrome)
    - Absolute c/i = chorioamnionitis, foetal death, or any need for immediate delivery
    - **Ritrodine** i.v. infusion regimen – increase dose in 50µg/min steps every 15 minutes
    - Monitor:
      - maternal pulse (<140)
      - temperature, ↑ FHR (<20 rise)
      - maternal B.P. (<20mmHg fall in systolic)
      - beware nausea, vomiting, tremor and flushing
      - maternal hyperglycaemia, pulmonary oedema, and exacerbation of known heart failure ← chest pain dyspnoea or dry cough
  - Glucocorticoids promote foetal surfactant production
    - Lower mortality and respiratory distress syndrome
    - Help close patent ducteses
    - Only use before 34 weeks gestation
    - 12mg **betamethasone** or **dexamethasone** BD i.m injection; effects last 1 week
    - avoid if severe pre-eclampsia, infection, or HIV +ve

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**INTRA-UTERINE GROWTH RETARDATION**

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- ❖ Must differentiate premature babies from those who are small for gestational age (SGA)
  - SGA babies weigh less than the 10<sup>th</sup> centile for their gestational age.
  - Premature babies:
    - Lack of ear cartilage before 37 weeks → ears do not spring back when folded
    - Testes in inguinal canal at 35 weeks; in the scrotum at 37 weeks
    - Do not lie with legs flexed at 32 weeks; all limbs flexed at 36 weeks
    - No breast bud tissue before 34 weeks
    - Skin creases on the anterior third of foot by 35 weeks; anterior two thirds by 39
    - Premature babies tend to have red, hairy skin.
  
- ❖ Predisposing factors:
  - Multiple pregnancy
  - Malformation
  - Infection
  - Maternal smoking
  - Diabetes
  - Hypertension (e.g. pre-eclampsia)
  - Severe anaemia
  - Heart and renal disease
  
  - Placental insufficiency – head circumference spared; asymmetrical IUGR
    - Oligohydramnios and poor foetal movements are other indications
  
- ❖ Plan:
  - Monitor head and abdomen circumferences by USS
  - Those with normal Doppler umbilical cord blood flow have a better prognosis
  - If poor cord flow → maternal ↓ dose aspirin
  - Advise mother the stop smoking, and use a foetal kick chart
  - CTG to detect babies becoming hypoxic, allowing immediate delivery
  - After delivery, monitor neonatal temperature and use an incubator
  - Hypoxia leads to a ↑ Hb at birth, so jaundice is more common
  - Prone to hypoglycaemia, since ↓ glycogen reserves
  - Monitor glucose before giving 3-hourly feeds; if persistently ↓ glucose, transfer to SCBU
  
- ❖ Complications/predispositions in adulthood:
  - Hypertension
  - NIDDM
  - Coronary artery disease
  - Autoimmune thyroid disease

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**DIABETES IN PREGNANCY**

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- ❖ Glycosuria common in pregnancy since ↑ glomerular filtration and ↓ tubular reabsorption
- ❖ Maternal glucose levels are usually constant (4 to 4.5 mmol/l), except after a meal
- ❖ Some practices perform a blood sugar level 1h after a 50g glucose load fruit flavoured drink.
  - Perform a formal GTT if the blood glucose is > 7 mmol/l
- ❖ Maternal complications:
  - Polyhydramnios (25% - ? due to foetal polyuria)
  - Pre-term labour (17% associated with polyhydramnios)
    - Administration of steroids can interfere with glucose control
    - Place on insulin sliding scale, and continue for 12h after 2<sup>nd</sup> i.m. dose
  - Still birth near term
  - Retinopathy, nephropathy, autonomic neuropathies
  - Hypertension and pre-eclampsia
- ❖ Foetal complications:
  - 3-4 fold rise in malformations
  - Sacral agenesis
  - Cardiac anomalies
  - Macrosomia 2° to actions of ↑ insulin and insulin GF1
  - Paradoxical IUGR
  - Post-natal:
    - Hypoglycaemia
    - Hypomagnesaemia
    - Respiratory distress 2° to delayed surfactant production
    - Polycythaemia and neonatal jaundice 2° ↑ fragility from glycosylated Hb
- ❖ Antenatal care:
  - Joint diabetic and antenatal clinics
  - Confirm gestation with an early USS, with an anomaly scan at 18-20 weeks
  - Foetal echo at 24 weeks
  - Educate about benefits of normoglycaemia and home BM monitoring
  - Regular post-prandial monitoring does *no* harm to the baby
  - Monitor foetal growth
- ❖ Delivery:
  - Deliver at 36-38 weeks under close supervision and monitoring
  - Aim for vaginal delivery, with labour < 12h; have attending obstetrician at hand.
  - Avoid acidosis and maternal hyperglycaemia (causes foetal hypoglycaemia)
  - Give insulin the evening before elective induction – insulin needs ↓ in and after labour.
    - Give 1 litre 10% glucose i.v. with 1-2 units of insulin per hour via i.v. syringe driver
    - Maintain blood glucose of 4.5 to 5.5 mmol/l
    - Use extra insulin if needed if □-agonists or steroids used in pre-term labour
    - Give pre-gestational insulin dose post-partum, and allow mother to eat a good meal
- ❖ Post-natal:
  - Oral hypoglycaemics contra-indicated if breast feeding
  - Foetal scalp pH checks + blood glucose and temperature monitoring
  - GTT 6 weeks post-partum; 50% of gestational diabetics develop NIDDM in < 10 years
  - 5% of gestational DM will develop IDDM in <5 years ( ↑ risk if non-obese, <30, no FH<sub>x</sub>)

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**ANATOMY OF THE CERVIX AND VAGINA**

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- ❖ Vagina is a fibromuscular elastic canal
  - Begins as opening in the vulva, posterior to the urethra
  - Extends from the hymen to the cervix of the uterus.
  
- ❖ The cervix extends in the anterior aspect of the superior end of the vagina
  - The anterior vaginal wall is shorter than the posterior (8cm compared with 9-10cm)
  - The posterior vaginal wall is covered by peritoneum; whilst the anterior wall has no contact with peritoneum
  - The clefts produced by the cervix projecting into the vagina, are called fornices:
    - Anterior fornix
    - Posterior fornix
    - 2 lateral fornices
  
- ❖ Relations:
  - Anterior = bladder and urethra
  - Posterior = perineal body, rectum, and rectovaginal septum (Pouch of Douglas)
  
  - Lateral = broad ligaments, ureters, uterine vessels, pelvic surface of levator ani urethral sphincter muscle, greater vestibular (Bartholin's) glands, perineal muscles
  
- ❖ Structures in the inferior part of the pelvic cavity can be palpated through the vagina:
  - Enlarged ovaries, cervix of the uterus.
  
- ❖ Arterial supply:
  - Vaginal artery is a branch of the uterine artery (may arise directly from internal iliac)
  - The two vaginal arteries anastomose with each other, and the cervical branch of the uterine artery
  - Internal pudendal and vaginal branches of the middle rectal artery also supply the vagina.
  
- ❖ Vaginal veins form vaginal venous plexuses along the sides of the vagina, and within its mucosa → drain into the internal iliac veins, but communicate with vesical, uterine and rectal venous plexuses.
  
- ❖ Innervation:
  - Vaginal nerves derived from the uterovaginal plexus, which lies in the base of the broad ligament on each side of the supra-vaginal part of the cervix.
  - These nerves are derived from the inferior hypogastric plexus and the pelvic splanchnic nerves.

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**CERVICAL SCREENING**

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- ❖ Squamous cell carcinoma of the cervix arises from a non-invasive precursor form: cervical intra-epithelial neoplasia (CIN).
    - Progression from CIN to invasive cancer takes 10-15 years; (huge variability)
  - ❖ Cytology screening of the superficial layers of the cervical epithelium is effective in picking up CIN → ↓ morbidity and mortality.
    - Routine UK screening of ♀ aged 16-65.
  - ❖ CIN is a spectrum of pre-malignant □ s in the cervical epithelium, usually beginning at the squamo-columnar junction within the endocervix, near the external os.
    - The squamo-columnar junction may be more found more distally:
      - During and after pregnancy
      - Following OCP use
    - Junction usually recedes proximally into the endocervix after the menopause
  - ❖ CIN I = mild dyskaryosis in the epidermis
  - ❖ CIN II = moderate dyskaryosis in the epidermis
  - ❖ CIN III = severe dyskaryosis and micro-invasion of the dermis (*carcinoma in situ*)
  - ❖ Many cases of CIN I spontaneously regress, and watchful waiting is allowed.
    - 3 successful CIN I smears require further referral for colposcopy and biopsy
    - A single smear showing CIN II or III require immediate referral.
  - ❖ Risk factors:
    - ↑ sexual activity at an early age; multiple sexual partners
    - ♂ with multiple partners increase the risk for ♀
    - cigarette smoking
    - non-barrier contraceptives
    - ? HSV II infection
    - HPV types 16, 18 and 31; HPV 6 & 11 are associated with benign condylomata
    - immunocompromised patients
  - ❖ False negatives for smears is 5-10% (i.e. specificity is 90-95%)
  - ❖ Colposcopy = direct vision of cervical lesion under a binocular light microscope.
    - Acetic acid is used to stain cells with high nuclear protein indicating dyskaryosis
    - Iodine is used to stain glycogen containing cells; immature cells will not take up dye
    - Biopsies are taken once the whole of the abnormality can be visualised
    - Eradication of abnormal tissue is by laser or diathermy
    - Excision by cone biopsy is an alternative for severe dysplasia or *carcinoma in situ*
    - Follow up is required by cervical cytology and/or further colposcopy.
- 
- ❖ Stage 0      *Carcinoma in situ*
  - ❖ Stage I      Microinvasive (I<sub>A</sub>) or any lesion restricted to the cervix (I<sub>B</sub>)
  - ❖ Stage II      Carcinoma spread to the vagina, but not to the lower third of the vagina and/or the lesion has spread into the parametrium, but not to the pelvic wall
  - ❖ Stage III      carcinoma has spread to the lower third of the vagina and/or has reached the bony pelvis
  - ❖ Stage IV      invasion of the rectum or bladder; or presence of distant metastases.



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**CERVICAL CARCINOMA**

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- ❖ Cancer of the cervix is the commonest malignancy of the female genital tract.
  - Affects 2% of ♀ over 40 years; average age at diagnosis is 45.
  - Early age first coitus, promiscuity and HPV are risk factors.
  - Disease affects lower socio-economic groups, who are least likely to have smears
  - 85-90% squamous cell carcinoma
  - 10-15% adenocarcinoma
  
- ❖ Carcinoma can spread directly to the vagina, uterus, rectum and pelvic wall
  - Or by lymphatics to the parametrial, iliac and obturator glands → then to aortic glands.
  - Haematogenous spread is late, to the lungs and skin.
  
- ❖ Symptoms:
  - Asymptomatic until reaches an advanced stage
  - Abnormal bleeding at an early stage – often neglected
  - Blood-stained vaginal discharge, with infection of neoplastic tissue
  - Late sequelae = severe haemorrhage, offensive discharge and fistulae
  - Bladder invasion → frequency, dysuria, haematuria
  - Bowel invasion → diarrhoea, PR-bleed and obstruction
  
  - Pain is a late complication ← nerve trunks of lumbo-sacral plexus, or ureteric obstruction
  
- ❖ Signs:
  - Friable, warty protrusions at the squamo-columnar junction, or an ulcerated growth.
  - Cervical ulcer spreading into vaginal wall, or bleeding following a smear are suspicious
  - Lesions feel hard, nodular and craggy on PV-examination
  
- ❖ Management
  - Confirm diagnosis by biopsy and histological assessment (e.g. direct or cone biopsy)
  - Accurate assessment of spread by EUA with curettage and cystoscopy.
  - CXR and IV-pyelogram to check for metastases.
  - CT/MRI to check for enlarged pelvic lymph nodes
  
- ❖ Radiotherapy:
  - Treatment of choice for advanced cases
  - Intra-cavity insertion of radium or caesium implants into the uterus.
  - Vaginal applicators are used around the cervix
  - Megavoltage X-ray therapy is directed against pelvic lymph nodes
  
- ❖ Surgery:
  - Carcinoma *in situ* is treated by cone biopsy, or a hysterectomy
  - In young ♀ with early stage I & II lesions, hysterectomy and bilateral salpingectomy is performed, with removal of the cervix and upper third of vagina.
  - Ovaries are removed in older women (> 40)
  
- ❖ Prognosis:
  - Stage I = 90% 5 year survival
  - Stage IV = 15%

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**ENDOCRINE CAUSES:**

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- Ovulatory
  - Short proliferative phase → polymenorrhoea
  - Long proliferative phase → oligomenorrhoeas
- Anovulatory
  - Acyclical → metrorrhagia
  - Cyclical → often infrequent but heavy periods
- Corpus luteum abnormality
  - Deficiency → premenstrual spotting, menorrhagia, and infertility
  - Prolonged (e.g. luteal cyst) → menorrhagia (protracted episodes of menstrual bleeds)
- ❖ Management of dysfunctional uterine bleeding:
  - < 20 years:
    - Pharmacotherapy only if bleeding excessive
    - D & C only if severe
    - Hysterectomy and endometrial ablation rare; ? ligation of internal iliac arteries
  - 20-40 years:
    - D & C preferable before any medication
    - Pharmacotherapy only if no suspicion of malignancy; for a maximum of 3 months
    - Surgery only if other methods fail
  - > 40 years:
    - Obligatory D & C
    - After exclusion of organic disease → pharmacotherapy
    - Hysterectomy or endometrial ablation frequently used if other methods fail.
  - Pharmacotherapy:
    - Progestogens: **norethisterone** 5-15mg, 15<sup>th</sup> to 25<sup>th</sup> day of cycle
    - PG inhibitors: **naproxen** 250mg TDS or QDS during periods
    - Fibrinolytic agents: **tranexamic acid** 1g to 1.5g, 2-4 times a day, during periods
- ❖ Post-menopausal bleeding – assume malignant until proved otherwise
  - Cervical lesions (*CIN, polyps, carcinoma*)
  - Vaginal (*carcinoma, sarcoma/adenosis, laceration, trauma, foreign body, infections*)
  - Urinary tract (*urethral caruncle*), GI tract (*colorectal carcinoma*)
  - External genitalia (*labial varices, condylomas, inflammation, trauma, vulval dystrophy*)
  - D & C mandatory, with cystoscopy to exclude urethral/bladder lesions, and sigmoidoscopy.
- ❖ Post-coital bleeding:
  - Benign or malignant cervical or vaginal lesions
  - A late symptom of cervical carcinoma  
*CIN starts in deeper layers of epidermis before eroding through to the surface, and invading the dermis*
- ❖ Intermenstrual bleeding:
  - May be related to ovulation bleeding
  - Must exclude endometrial carcinoma in ♀ over 40 years

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**IRREGULAR BLEEDING**

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- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>❖ In the pregnant ♀:           <ul style="list-style-type: none"> <li>➤ Chronic cervicitis</li> <li>➤ Carcinoma</li> <li>➤ Hydatiform mole</li> <li>➤ Incomplete abortion</li> <li>➤ Threatened abortion</li> <li>➤ Endometritis</li> <li>➤ Chronic epithelioma</li> <li>➤ Ectopic pregnancy</li> <li>➤ Endocrine asynchrony of the pituitary/ovarian/uterine axis</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>❖ In the non-pregnant ♀:           <ul style="list-style-type: none"> <li>➤ Chronic cervicitis</li> <li>➤ Cervical polyp</li> <li>➤ Carcinoma (ovarian, cervical)</li> <li>➤ Endometriosis</li> <li>➤ Endometrial hyperplasia</li> <li>➤ Adenomyosis</li> <li>➤ Endometrial polyp</li> <li>➤ Myoma</li> <li>➤ Salpingitis</li> <li>➤ Haemorrhagic, clear cell or granuloma cyst</li> </ul> </li> </ul> |
|--|---|

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**VAGINAL DISCHARGE**

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- ❖ Physiological – in young sexually active ♀; can be enhanced by certain varieties of OCP
- ❖ Infection
- ❖ Foreign body – e.g. tampon
  
- ❖ Neoplastic
  - Benign – fibroids, cervical polyps
  - Neoplastic – discharge with blood; cervical cancer
  
- ❖ H<sub>x</sub>:
  - Site, onset, and duration?
  - Course – worsening?
  - Colour? Smell?
  - Itching?
  - Dyspareunia? Dysuria?

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**VULVAL ULCERS**

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- ❖ Traumatic
- ❖ Infection – syphilis, herpetic
- ❖ Neoplastic – vulval carcinoma, or other local tissues
- ❖ Drug related

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**CONTACT BLEEDING**

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- ❖ Traumatic
  - Inflammation
  - Intercourse
  
- ❖ Infection – gonorrhoea or Chlamydia
- ❖ Neoplastic – cervical carcinoma (last smear?), cervical polyps

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**UTERINE FIBROIDS**

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- ❖ Leiomyomata are commonest tumour in ♀
  - 30% of women >35 years
  - more common in black women
- ❖ May be related to oestrogen stimulation
- ❖ Sites:
  - Sub serous – where the fibroid projects into the peritoneal surface of the uterus
  - Intra-mural
  - Sub mucous – indent the uterine cavity, and may be extruded through the cervix
  - Cervical
- ❖ Undergo various degenerative changes:
  - Atrophy
  - Hyaline degeneration
  - Cystic degeneration
  - Fatty degeneration
  - Calcification
  - Red degeneration – during pregnancy, caused by central infarction in mid-trimester
  - Other changes:
    - Torsion
    - Haemorrhage
    - Infection
    - Malignant (sarcomatous) change in 0.05%
- ❖ Symptoms:
  - Often asymptomatic; if small and after the menopause
  - Abdominal swelling
  - Pressure effects: urine retention, oedema
  - Menorrhagia – because of ↑ bleed area, ↑ vascularity, hyperplasia and ↓ uterine contraction
  - Pain – if torsion, degeneration or malignant □
- ❖ Effects of fibroids in pregnancy:
  - Infertility by tubal distortion
  - Sub mucous fibroids may hinder implantation
  - Cervical fibroids may cause an unstable lie or obstruct labour
  - Interference with uterine contractions → 1° PPH
- ❖ Effects of pregnancy on fibroids:
  - Hormonal □ → softens and ↑ size of fibroids
  - As the uterus grows, it tends to draw up fibroids, making them less problematic
  - Red degeneration → very tender, and may be mistaken for placental abruption.
- ❖ R<sub>x</sub>:
  - Conservative; watchful waiting
  - Myomectomy if further pregnancies wanted
  - Hysterectomy if family completed
  - Polypectomy of vaginal myometa for fibroid polyps.

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**PRE-MENSTRUAL SYNDROME**

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- ❖ PMS is a cyclical recurrence of a non-specific psychological, behavioural and somatic symptoms in the luteal phase of the menstrual cycle.
  - Relieved by the onset of, or during menstruation.
  
- ❖ Emotional/behavioural S<sub>x</sub>:
  - Depression
  - Irritability
  - Lability
  - Anxiety
  - ↓ Concentration
  - □ Libido
  - Aggression/violence
  - Fatigue
  
- ❖ Physical S<sub>x</sub>:
  - Breast tenderness
  - Bloating
  - Acne
  - Swollen fingers / ankles
  - Bachache
  - Weight gain
  - Exacerbates asthma, migraine & epilepsy

- ❖ R<sub>x</sub>
  - Evening primrose oil = **gamolenic acid** (*Efemast*) 40-80mg
  - **Pyridoxine** 100 mg – corrects Vit B<sub>6</sub> and ↓ depression by altering dopamine and 5-HT.
  - **Agnus Castus** (irridoids & flavonoids) cf. sex hormones of corpus luteum
  - **Mg<sup>2+</sup>** and **Ca<sup>2+</sup>** : co-factors in the conversion of tryptophan into serotonin
  - **SSRIs** ?
  - **Diuretics** vs. bloating and weight gain
  - **Bromocriptine** reduces dopamine levels; ↓ cyclical breast pain
  - **Mefanamic acid** (PG synthase inhibitor)
  - **GnRH analogues** – suppress gonadotrophin release
  - **Mirena** coil with 100µg **oestrogen** patches

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**GENETIC DISEASE**

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- ❖ Autosomal dominant:
  - Polycystic kidneys (16p)
  - Huntingdon's Chorea (4p)
- ❖ Autosomal recessive:
  - Cystic fibrosis (7q)
  - □ -Thalassaemia
  - Sickle-cell (11p)
  - Fanconi's Anaemia
- ❖ X-linked:
  - Duchenne muscular dystrophy
  - Haemophilia A and B
  - Fragile X Syndrome

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**PELVIC INFLAMMATORY DISEASE**

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- ❖ Ascending infection of the upper ♀ genital tract, unrelated to pregnancy or surgery
  - Costs £200 million per annum; delay will ↑ likelihood of ectopic and infertility
  
- ❖ Complications:
  - Ectopic pregnancy
  - Infertility
  - Pelvic pain
  - Menstrual irregularity
- ❖ Risk factors:
  - Smoking
  - Sexual behaviour
  - IUD
  - Infection with Chlamydia, N. gonorrhoeae, E. coli
  - CMV, HSV, Mycoplasma hominis, Gardnerella vaginalis
  
- ❖ Acute symptoms and signs:
  - Severe lower abdominal pain
  - Abdominal guarding? Rebound tenderness?
  - Offensive vaginal discharge
  - Pyrexia, tachycardia
  - Sepsis → hypotensive
  - Tender adnexae and a palpable mass PV-exam.
  
- ❖ Chronic symptoms and signs:
  - Malaise, fatigue, headache
  - Backache, and chronic lower abdominal pain (exacerbated by menstruation)
  - Intermittent vaginal discharge
  - Deep dyspareunia
  - o/e: bulky tender uterus ± tender adnexal mass of tubo-ovarian origin
  
- ❖ Investigations:
  - FBC, endocervical and high vaginal swabs
  - Urethral swab, and 1<sup>st</sup> voided sample
  - Laparoscopy (50% sensitive, 80% specific – is this an actual gold standard)
  
- ❖ R<sub>x</sub>:
  - Health education, barrier contraception, OCP vs. IUD
  - ↓ smoking
  - Antibiotics if bacterial origin:
    - **Doxycycline** 100mg BD + **Metronidazole** 400mg BD x 14 Days, **Ceftriaxone** 250mg IM single dose
    - **Ofloxacin** 400mg BD + **Metronidazole** 400mg BD x 14 Days
  - Laparoscopy:
    - grading of PID
    - bacteriological culture from peritoneal fluid,
    - drainage of infective pelvic collection,
    - removal sequelae of PID
  - GUM clinic referral + contact tracing + R<sub>x</sub> of partner(s)

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**INTRA-UTERINE DEVICE**

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- ❖ Main effect is to inhibit implantation of a fertilised egg in the uterine wall.
- ❖ Can be inserted at any time of the menstrual cycle; best during or just after menstruation.
  - Need to wait 6 weeks after full term pregnancy, before insertion
  - Women must check position of string in vagina, to ensure IUD is still placed optimally.
  - Needs replacing every 3-5 years, if copper containing device used.
- ❖ C/I:
  - H<sub>x</sub> of fibroids, or pelvic disease, or infection of the fallopian tubes.
  - Women with heavy/painful periods – can be exacerbated by IUD
- ❖ PID among IUD-users is related to the insertion process and the background risk of STD
  - >20 days after insertion the risk is similar to the risk in the general population
  - No increased risk of infertility on removal of device
- ❖ Most at risk for STD are those women below the age of 25 either with multiple sexual partners or with a partner having multiple sexual partners regardless of parity and regardless of method of contraception.
- ❖ In case of frequently missing pills or otherwise inadequate contraception an IUD should be offered to adolescents as a safe and reliable alternative.
- ❖ In women who become pregnant despite the use of IUDs there is a much higher risk of ectopics:
  - 1 in 8 for copper IUD
  - 1 in 3 for Mirena IUD.



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VAGINITIS

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- ❖ Vaginitis is inflammation of the vagina, and affects women of all ages.
- ❖ Can be caused by STDs
- ❖ Causes:
  - Disruption of vaginal flora
  - ↓ *Lactobacillus* levels → bacterial vaginosis
  - *Chlamydia trachomatis* → endocervicitis and discharge
  - parasite (*Trichomonas vaginalis*) → Trichomoniasis
  - *Candida albicans* causes 80% of yeast infections
  - Gonorrhoea, chlamydiosis and genital herpes are STD
  - Allergens → allergic vaginitis (e.g. perfumes, bath oils, latex condoms, spermicide, tampon)
- ❖ Symptoms:
  - Abnormal vaginal discharge
  - Fish like odour (50%), thin yellow-green discharge
  - Burning, itching and thick-white-“cottage cheese” discharge
  - Pain, burning and itching after intercourse = atrophic vaginitis in postmenopausal ♀.
  - Risk of delivering a premature or ↓ birth weight baby.
- ❖ Risk factors:
  - New/multiple sexual partners
  - Oral sex / douching
  - Antibiotic use, poor nutrition, stress
  - OCP, uncontrolled DM, AIDS, immunosuppressed drugs.
- ❖ Ix = vaginal swabs.
- ❖ Prophylaxis:
  - Barrier protection
  - Keep genital area clean, dry and well-ventilated.
  - Avoid deodorant soaps, sanitary pads and panty liners, since these may be allergenic.
  - Wipe front to back after using the toilet.
- ❖ Rx:
  - Baking soda sitz bath.
  - Drug therapy.
  - Relapse within one month, in 30%

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**CHLAMYDIAL INFECTIONS**

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- ❖ *Chlamydia trachomatis* infects the columnar or transitional epithelium of the urethra, endocervix.
  - Can spread to the endometrium, Fallopian tubes, peritoneal cavity and rectum
  - An obligate intracellular parasite.
  - Often a co-infection with other STDs (e.g. gonorrhoea)
  - Transmitted through sex, and the birth process to the newborn.
  
- ❖ 70% ♀, and 50% ♂ will be asymptomatic.
  
- ❖ Chlamydial infection is the commonest cause of PID
  - 10% risk of ectopic pregnancy
  - 20% risk of infertility; rises with each episode of PID.
  - 50% of babies born to untreated mothers will have eye disease, and 20% pneumonia.
  
- ❖ ↑ Risk group:
  - sexually active ♀ < 25 years old
  - non-barrier contraception
  - ♀ with 2+ sexual partners in the last year
  - GUM clinic attendees having a partner with non-specific urethritis or gonorrhoea.
  
- ❖ Clinical features:
  - Mucopurulent vaginal discharge
  - Hypertrophy of the cervix → oedematous & bleeds.
  - Urethritis
  - Bartholinitis
  - Endometriosis
  - Salpingitis → ?Fitz-Hugh Curtis Syndrome (= spread to liver capsule + RUQ/shoulder pain)
  - Dysuria or frequency
  - Lower abdominal pain
  - Post-coital bleeding, dyspareunia (=painful intercourse)
  - Dysmenorrhoea
  
- ❖ Diagnosis – endocervical swabs.
  
- ❖ R<sub>x</sub>:
  - **Doxycycline** 100mg BD, for 7 days
  - In pregnant/lactating ♀, use **erythromycin** 500mg QDS for 7 days
  - For better compliance: **azithromycin** 1g stat dose.
  - Sexual abstinence until they and their partner have completed R<sub>x</sub>.
  - Follow up in 1 week to check compliance, abstinence and contact tracing.
  
- ❖ Complications:
  - Can facilitate HIV transmission
  - Reiter's Syndrome

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**DYSMENORRHOEA**

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- ❖ Painful menstruation → radiating to the lower back, and down to the top of the legs.
  - 1° dysmenorrhoea occurs within 1-2 years of menarche
  - 50% of women between the ages of 15 and 24 are affected.
  - Pain mediated by prostaglandins.
  - May be caused by PID, congenital abnormalities and endometriosis.
  
- ❖ Extra-gynaecological symptoms:
  - Nausea/vomiting
  - Pallor/ fainting
  - Headache/migraine
  - Bowel disturbance
  - Bladder irritability
  
- ❖ R<sub>x</sub>:
  - Conservative = cuddle hot water bottle, or exercise to ↑ endogenous endorphins
  - Prostaglandin synthetase inhibitors – **mefenamic acid**, flufenamic acid
  - **Naproxen** (NSAID) to lessen pain
  - Begin treatment as soon as the period starts
  - Alternative = combined oral contraceptive pill or depot
    - Will suppress ovulation and reduce the amount of blood lost.
  
  - If refractory to R<sub>x</sub> → laparoscopy (since endometriosis may occur as early as 3-4 years after the onset of menstruation).
  
- ❖ 2° dysmenorrhoea:
  - PID
  - Endometriosis
  - Adenomyosis (= endometriosis occurring in the myometrium)
  - Uterine fibroids
  - Cervical stenosis
  - Psychological factors (school, career, or family pressures; abuse; bereavement)
  - IUD devices

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**ACUTE PELVIC PAIN**

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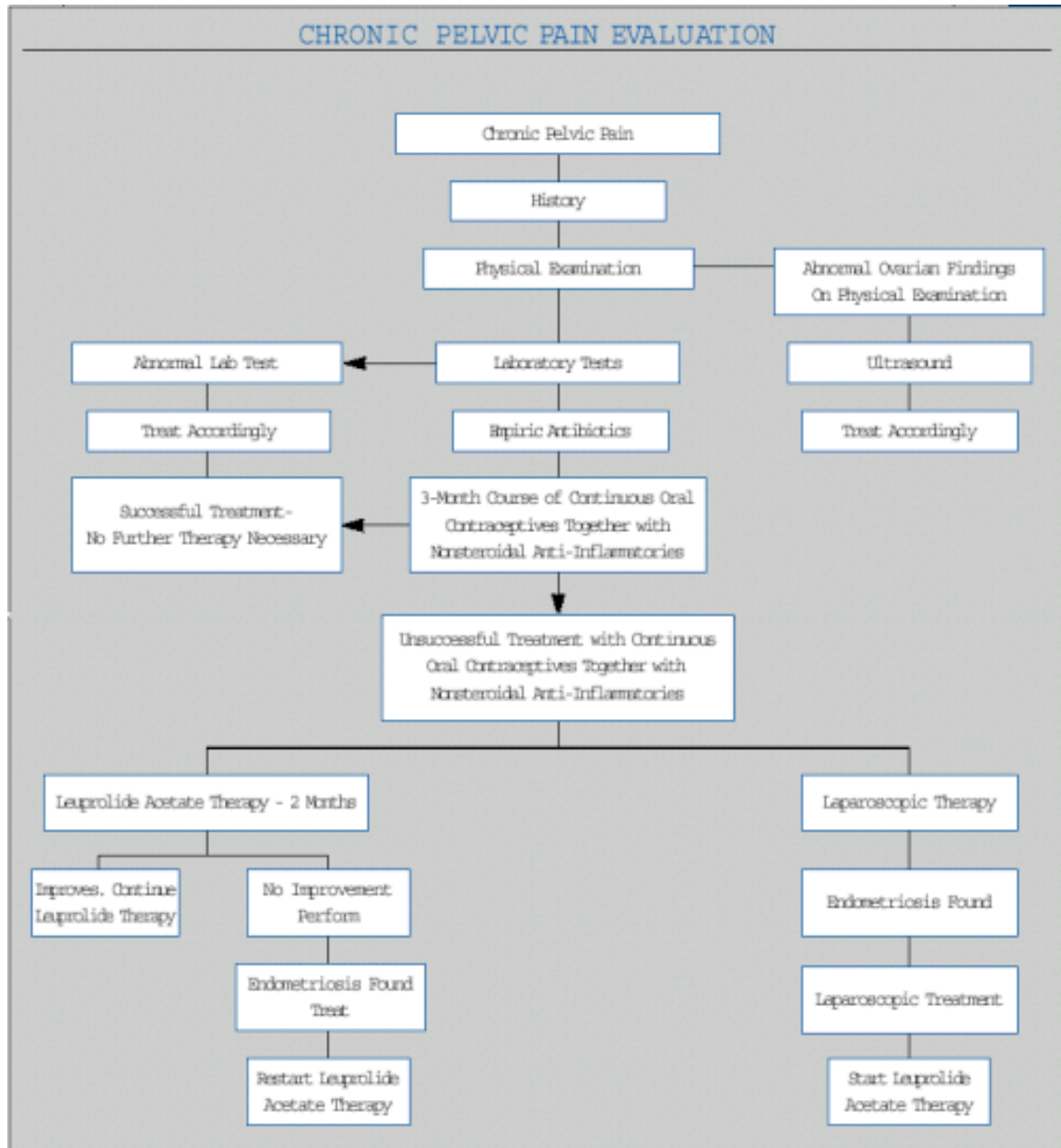
- ❖ Causes:
  - Ectopic pregnancy
  - Miscarriage
  - Degenerating fibroid
  - Onset of PID
  - Ruptured corpus luteum
  - Rupture or torsion of an ovarian cyst; (associated with N+V)
  - Ovulation pain (mittelschmerz)

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**CHRONIC PELVIC PAIN**

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- ❖ Non-menstrual pain of 3+ months duration that localizes to the anatomic pelvis.
- ❖ Differential diagnosis:
  - Gynaecological:
    - Endometriosis
    - Adhesions (chronic PID)
    - Leiomyoma & adenomyosis
    - Diastasis Symphysis Pubis (DSP)
    - Ovarian cyst
    - Uterine prolapse
  - GI disease:
    - IBS
    - Diverticulitis
    - Chronic appendicitis
    - Meckel's diverticulum
  - GU disease:
    - Interstitial cystitis
    - Bladder dyssynergia
    - Chronic urethritis
  - Myofascial disease:
    - Fasciitis
    - Nerve entrapment
    - Hernia
  - Skeletal disease
    - Scoliosis
    - L1-L2 back disorders
    - Spondylolithesis
    - Osteitis pubis
  - Psychological
    - Psychosexual dysfunction
    - Depression (with somatisation)
- ❖ R<sub>x</sub>:
  - Laparotomy is useful in pelvic adhesions. Endometriosis is treated by electrocoagulation, allowing uterosacral nerve ablation for treating dysmenorrhoea.
  - Presacral neurectomy treats dysmenorrhoea, dyspareunia and relieves often pelvic pains.
  - Hysterectomy and b/l oophorectomy was more effective than OCP and NSAIDS in women with pelvic congestion syndrome.
  - GnRH agonists against endometriosis?
- ❖ Diastasis Symphysis Pubis (DSP) = an abnormally wide gap (>1cm) between pubis bones.
  - Follows pregnancy, when progesterone softens ligaments to allow delivery
  - Pain felt in hips and groin → radiated down inner thigh
  - D<sub>x</sub> by X-ray or USS; R<sub>x</sub> is with analgesia, NSAIDs and physiotherapy.



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**ENDOMETRIOSIS**

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- ❖ 2<sup>nd</sup> most common gynaecological condition
  - Affects ♀ in their thirties, who may have delayed childbearing.
  - Can occur from 3-4 years after menarche, but rarely begins after menopause.
  
- ❖ Condition where the cells normally lining the uterus are found in other areas of the body (but usually within the pelvis).
  - Endometrial tissue in the ovary forms *chocolate cysts*. (looks like the burnt head of a match)
  - This ectopic tissue undergoes the same hormone driven monthly changes as the uterus.
  - Consequent internal bleeding into the pelvis has no way of leaving the body
  - Results in inflammation, pain and scarring.
  - Foci in lungs can result in haemothorax!
  
- ❖ Hypothesised causes:
  - RETROGRADE MENSTRUATION
  - Lymphatic or circulatory spread
  - Genetic predisposition
  - Immune dysfunction
  - Environmental exposure (e.g. dioxin)
  
- ❖ Symptoms:
  - Dysmenorrhoea – irregular heavy periods, prolonged bleeding, pre-menstrual spotting.
  - Dyspareunia
  - Infertility
  - Mittelschmerz
  - *Fixed retroverted uterus o/e*
  - Painful bowel movements
  - Diarrhoea, constipation or colic
  - PR-bleeding
  - Dysuria
  
  - Chocolate cysts may be pain free.
  - Degree of pain does not always correspond with the severity of the disease.
  
- ❖ D<sub>x</sub> = laparoscopy
  
- ❖ R<sub>x</sub>:
  - Analgesia
  - Testosterone derivatives to suppress menstruation and shrink lesion – **danazol**, **gestrinone**
  - Progestogens to mimic pregnancy and ↓ symptoms – **norethisterone**
  - GnRH analogues – leuprorelin (Prostap), goserelin (Zoladex)
  - Combined OCP
  - Mirena coil
  
- ❖ Conservative surgery to remove and destroy the endometrial growths. Radical surgery is a last resort, and involves hysterectomy with b/l oophorectomy.
  
- ❖ Prognosis: endometriosis is chronic and relapsing. In 50% it is progressive, and there is no evidence that R<sub>x</sub> helps fertility.

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**MENOPAUSE**

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- ❖ Mean age of menopause is 51 – the permanent cessation of menstruation resulting from loss of ovarian follicular activity.
  - Advanced a few years by smoking.
  - Premature menopause < 45 years old
  
- ❖ The perimenopausal period includes the menopause transition (3.5 to 4 years), and ends 12 months after the final menstrual period.
  
- ❖ Short-term symptoms:
  - Hot flushes and sweats (40%)
    - Vasomotor impairment
    - No reflex vasoconstriction in the skin to an ice stimulus.
  - Urinary and vaginal symptoms (min 50%)
    - Vaginal discomfort
    - Dyspareunia
    - Recurrent UTIs
    - Urinary incontinence
    - ↓ Pelvic floor tone
    - Generalised atrophy of oestrogen dependent tissue
  - Mood changes (25% - 50%)
    - Nervousness
    - Anxiety
    - Irritability
    - Depression
    - Forgetfulness
    - ↓ Concentration
  - Long term sequelae:
    - Cardiovascular disease and atherosclerosis
    - Osteoporosis – ↓ Oestrogenic stimulation of osteoblasts, and unopposed osteoclasts
    - Alzheimer's disease – particularly in thin ♀; ↓ peripheral adipose conversion of steroids to oestrogen

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**HORMONE REPLACEMENT THERAPY**

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- ❖ Symptoms of the menopause may be minor or severe ← natural fall in production of endogenous oestrogens and progesterones.
  - 25% of women > 60 suffer with osteoporosis; rises to 50% in women > 70 years.
- ❖ Factors to consider with HRT:
  - Begin treatment early. Once bones are thin, therapy will prevent further loss, and not strengthen existing bones.
  - Once HRT is stopped, there is rapid loss of calcium → life-long therapy needed
  - Cost must be weighed against the potential benefits of reduced fractures in old women, which result in long hospital stays. Physical and psychological costs must be included.
  - Continuation of menstruation into the seventies may be unacceptable to some women. HRT may be used in the short-term to alleviate symptoms of the menopause, and only continued in patients at high risk of osteoporosis.
- ❖ If symptoms of the menopause are very mild, HRT may not be needed.
  - Topical oestrogens creams can be used vs. vaginal dryness, soreness or recurrent vaginal infections.
  - Topical oestrogens can improve skin turgor, and combined with pelvic floor exercises, may improve urinary problems.
- ❖ Contra-indications to HRT:
  - History of thromboembolism
  - Oestrogen-dependent tumours (e.g. breast or endometrium)
  - Liver disease (e.g. chronic hepatitis or cirrhosis); gall stones
  - Pre-existing coronary artery disease
  - Porphyria
  - Hyperlipidaemia
- ❖ Special care in patients with obesity, hypertension, diabetes, heavy smoking or varicose veins.
- ❖ HRT is particularly beneficial in:
  - Inactive women, with an increased risk of osteoporosis
  - Women with previous fractures or a strong FHx of osteoporosis
  - 50% reduction of cardiovascular disease in 1° prevention
  - Women who have had a premature menopause – have an increased risk of cardiovascular disease → 2° prevention in this group reduces risk by 80%
  - Patients with type II lipoproteinaemia
  - ? Prevent or delay onset of Alzheimer's Disease:
    - Oestrogen may ↑ synthesis of neurotransmitter
    - Exert a direct effect on neural cells
    - Suppress Apolipoprotein E
- ❖ Side-effects of HRT:
  - Regular withdrawal bleeding
  - Nausea
  - Bloating abdomen
  - Hypertension
  - Migraine
  - Gall bladder disease





- ❖ Risks associated with HRT:
  - ↑ risk of risk of endometrial hyperplasia/carcinoma (×5) with unopposed oestrogen R<sub>x</sub>
  - Mastitis - ? ↑ risk or ER +ve breast cancer
  - Thromboembolism (but no increase in risk of MI or CVA)
  - Diabetic control may be hindered
  
- ❖ Unopposed oestrogens:
  - Oral preparations, an implant or a transdermal patch
  - Only for women who have had a hysterectomy
  
- ❖ Combined oestrogen and progesterone:
  - Cyclical therapy to produce regular withdrawal bleeding in women who still have their uterus – given during and after the menopause.
  - Marketed in calendar packs, or given by depot implant with 7-10 days of progesterone each month.
  - Implants tend to last 6 months, but give high peak doses and have an uncertain duration of action. The dose cannot be altered once administered.
  
- ❖ Continuous HRT = oestrogen with ↓ dose progesterone
  - Bleed free
  - Only start 12 months after LMP
  - Not for women younger than 54
  
- ❖ All patients on HRT need regular 6 monthly follow-up, with blood pressure and vaginal checks, and a record of their bleeding.
  
- ❖ Forms of HRT:
  - Oral – undergoes 1<sup>st</sup> pass hepatic metabolism
  - Trans-dermal – placed in alternate buttocks; last 4-7 days
  - Subcutaneous implants – beware tachyphylaxis
  - Vaginal
  - IUD with levonorgestrel (progestogen)
  - Tibolone – combines Oestrogenic and progestogenic activity with weak androgenic action
    - given continuously
    - controls vasomotor symptoms
    - bone protective
    - beware erratic PV-bleeding

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**DYSPAREUNIA**

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- ❖ Superficial:
  - Hormonal – lack of lubrication
  - Spermicide sensitivity or wrongly sized diaphragm
  - Skin lesions, Bartholin's abscess
  - Severe vulval/vaginal infection with monilia; accompanying pruritus vulvae
  - Laceration (e.g. repair of episiotomy or posterior repair)
  - Truly imperforate or rigid hymen/vaginal septum
  - Atrophic vaginitis with age
  - Vaginal stenosis following radiotherapy
  - Bilateral levator spasm will obstruct vagina about 1 inch from its orifice (**Vaginismus**)
  
- ❖ Deep – retroverted uterus with ovaries lying in the Pouch of Douglas – sensitive when knocked
  - Mobile retroversion has 5-10% prevalence among ♀
  - Only fixed retroversion is problematic
  - Commonly caused by chronic pelvic infection (PID, vulvitis, urethritis/cystitis) or endometriosis
  
- ❖ Investigate if symptoms recur on PV-examination, demonstrating an organic cause. Laparoscopy may be needed.
  
- ❖ 50-60% of □ do not have identifiable organic disease present → psychosexual disorder?