PRETERM LABOUR

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DEFINATION

- Preterm labor (PTL) is defined as the onset of labor after the gestation of viability i.e.20 weeks, and before 37 completed weeks of pregnancy.

ACOG JUNE 2012

INCIDENCE...

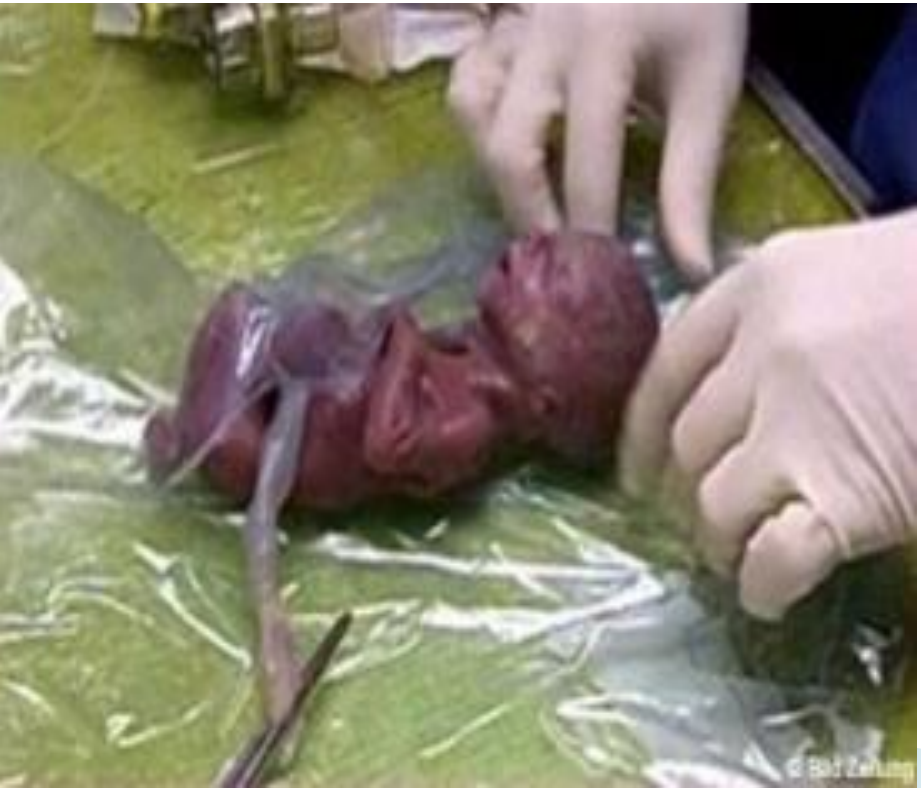
- Preterm birth occurs in 7-12% of all deliveries.

STUDD

- ✓ Europe : 5–9%
- ✓ USA : 12–13%
- ✓ India : 6-10%

CLASSIFICATION OF PRETERM BIRTH...

- Late preterm birth - 34 - 37 weeks
- Very preterm birth 30 - 34 weeks
- Extremely preterm birth - 24 - 30 weeks



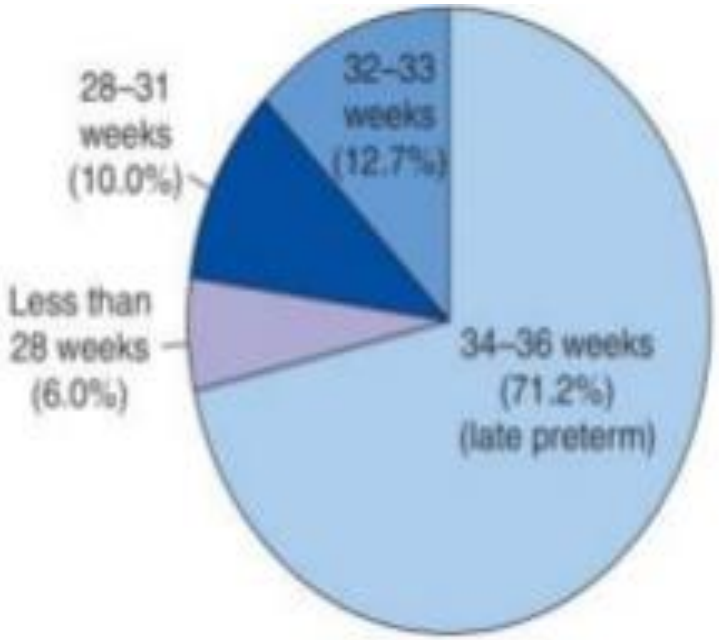


FIGURE 36-7 Percent distribution of preterm births in the United States for 2004. (From Martin and colleagues, 2006.)

BURDEN OF ILLNESS: SIGNIFICANCE…

Accounts for over 85% of perinatal morbidity and mortality.

Major short term problems in preterm infants include:

- Respiratory distress syndrome
- Bronchopulmoniary dysplasia
- Necrotizing enterocolitis
- Hospital acquired infections
- Intra ventricular hemorrhage
- Retinopathy of prematurity
- Patent ductus arteriosus
- Hypoglycemia etc.

Long term problems include :

- Reactive airway disease
- Asthma
- Bronchiolitis
- Cerebral palsy, Cerebral atrophy
- Hydrocephalus
- Neurodevelopmental delay
- Hearing loss
- Blindnesss, Retinal detachment
- Pulmonary hypertention
- Hypertention in adulthood
- Increased insulin resistence etc.

ETIOLOGY...

In about 50 % , the cause of preterm labour is not known, often it is multi factorial. The following are however related with increased incidence of preterm labour.

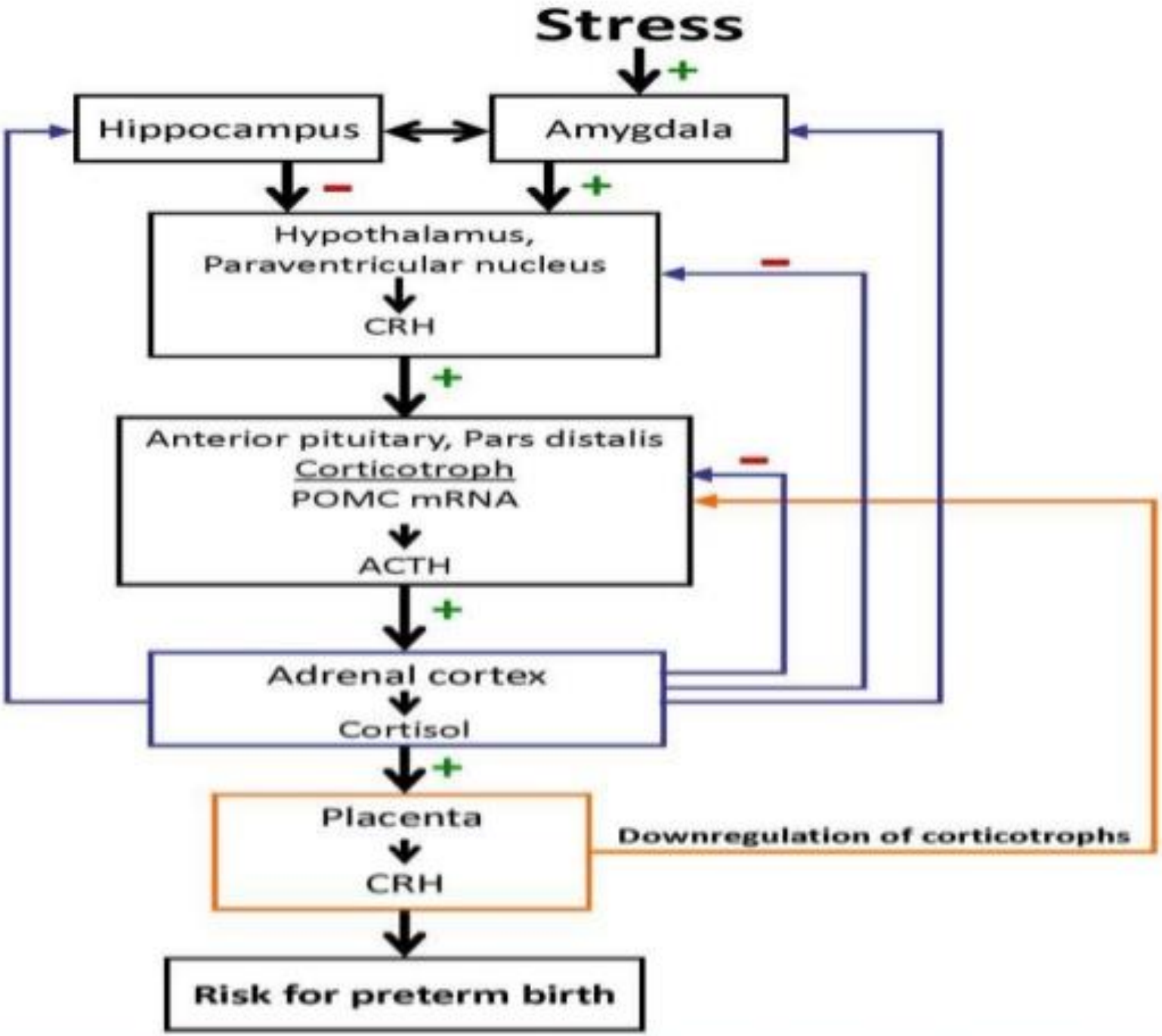
HIGH RISK FACTORS

(A) History :

1. Previous history of induced or spontaneous abortion or preterm delivery.

First Birth	Second Birth	Subsequent Preterm Birth (%)
Not preterm		4.4
Preterm		17.2
Not Preterm	Not Preterm	2.6
Preterm	Not Preterm	5.7
Not preterm	Preterm	11.1
Preterm	Preterm	28.4

- 2. Pregnancy following ART:
  - Multiple gestations
  - Microbial colonization of the upper genital tract
  - Increased stress among infertile couple
  - Side effects of super ovulation
  - Increased rate of birth defects have been proposed.
- 3. Asymptomatic bacteriuria or recurrent urinary tract infections.
- 4. Smoking habits
- 5. Low socio economic and nutritional status.
- 6. Maternal stress


Stress
+
Hippocampus
Amygdala
−
+
Hypothalamus,
Paraventricular nucleus
CRH
−
+
Anterior pituitary, Pars distalis
Corticotroph
POMC mRNA
ACTH
−
+
Adrenal cortex
Cortisol
+
Placenta
CRH
Downregulation of corticotrophs
Risk for preterm birth

(B)COMPLICATIONS IN PRESENT PREGNANCY…

1.Maternal:

a) Pregnancy complications

i. Pre-eclampsia
ii. Antepartum haemorrhage
iii. Premature rupture of membranes
iv. Polyhydroamnios

b)Uterine anamolies

c)Cervical factors

I. Incompetent cervix
II. Cervical surgeries e.g. conisation and LEEP
III. Short cervical length

COMPLICATIONS...

d)Medical and surgical illness:

I. Acute fever
II. Acute pyelonephritis
III. Diarrhoea iv. Acute appendicitis
IV. Toxoplasmosis
V. Abdominal surgery
VI. Chronic diseases like hypertention, nephritis, diabetes, decompensated heart legion, severe anameia.

COMPLICATIONS…

e)Genital tract infections

I. Genital tract infections are associated with preterm birth.
II. In women in spontaneous preterm labour and intact membranes, lower genital tract flora are commonly found in the amniotic fluid, placenta and membranes.
III. The flora include Ureaplasma, Urealyticum, Mycoplasma hominis, Fusobacterium species, Gardnerella vaginalis, Petostreptococci and Bacteroides species.

- Positive cultures of fetal membranes have been reported in 20-60% of women with preterm labour before 34 weeks gestation.

- The frequency of positive cultures increases as gestational age decreases from 20-30% after 30 weeks to 60% at 23-24 weeks gestation. Evidence of infection is less common after 34 weeks.

BACTERIAL VAGINOSIS

- In this condition normal hydrogen peraoxide producing lactobacillus predominant vaginal flora is replaced with anerobes that include gardnerella vaginalis bacteroids , prevotella, mobiluncus and micoplasma hominis.
- BV is associated with two fold increased risk of spontaneous preterm birth.
- Despite the association antibiotic eradication of BV does not consistently reduce the risk of preterm birth.

- **Fetal factors:**

  Multiple pregnancy

  Congenital malformations

  Intrauterine death

- **Placental factors:**

  Infarction

  Thrombosis

  Placenta previa

  Placental abruption

C. Iatrogenic: Indicated preterm birth

PIH (40%)

Fetal distress (25%)

IUGR (10%)

Placental abruption (7%)

Uncontrolled diabetes, decompensated heart lesion, severe anaemia, IUD (7%)

D) Idiopathic(Majority):

Prematurity, effacement of the cervix with irritable uterus and early engagement of the head are often associated.

In the absence of any complicating factors, it is presumed that there is premature activation of the same systems involved in initiating labour at term.

ETIOPATHOGENESIS.....

- The exact cause of preterm birth is unsolved.
- The cause of 50% of preterm births is never determined.
- Four different pathways have been identified that can result in preterm birth.
- One or more than one pathway can be activated at the same time.

PATHWAYS TO PRETERM BIRTH...

- Inflammation (40%)
  Infection
- Activation of the maternal-fetal hypothalamic–pituitary–adrenal (HPA) Axis (30%).
  Stress.
- Decidual hemorrhage(20%).
  Abruption.
- Uterine distension (10%)
  Stretching

JAMES

Chorioamnionitis

Modes of spread

- ✓ Hematogeneous,
- ✓ **Ascending**
- ❖ Iatrogenic
- ❖ Retrograde.

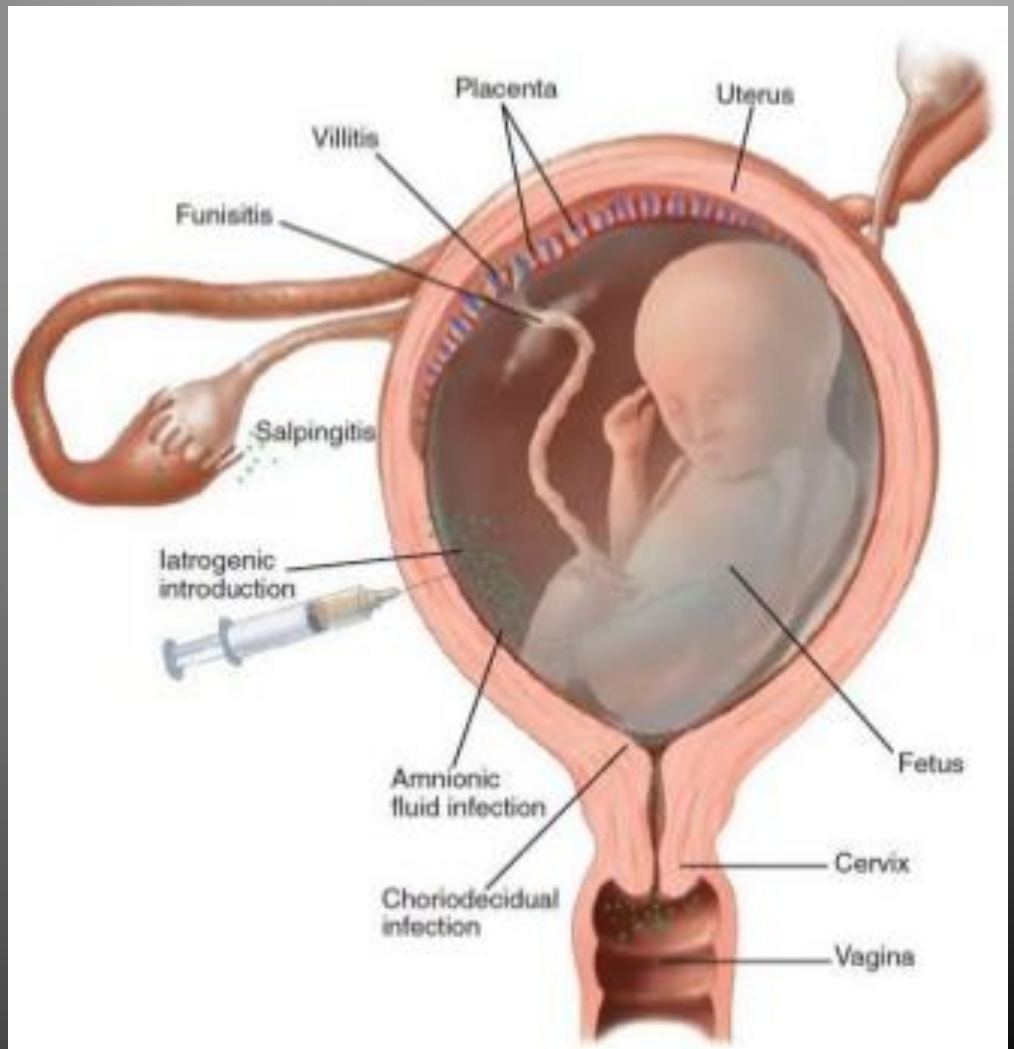


FIGURE 36-10 Potential routes of intrauterine infection

- Acute and subclinical chorioamnionitis.

Acute chorioamnionitis –

0.5 – 1% of all pregnancies.

10% of established preterm labour.

Diagnostic criteria –

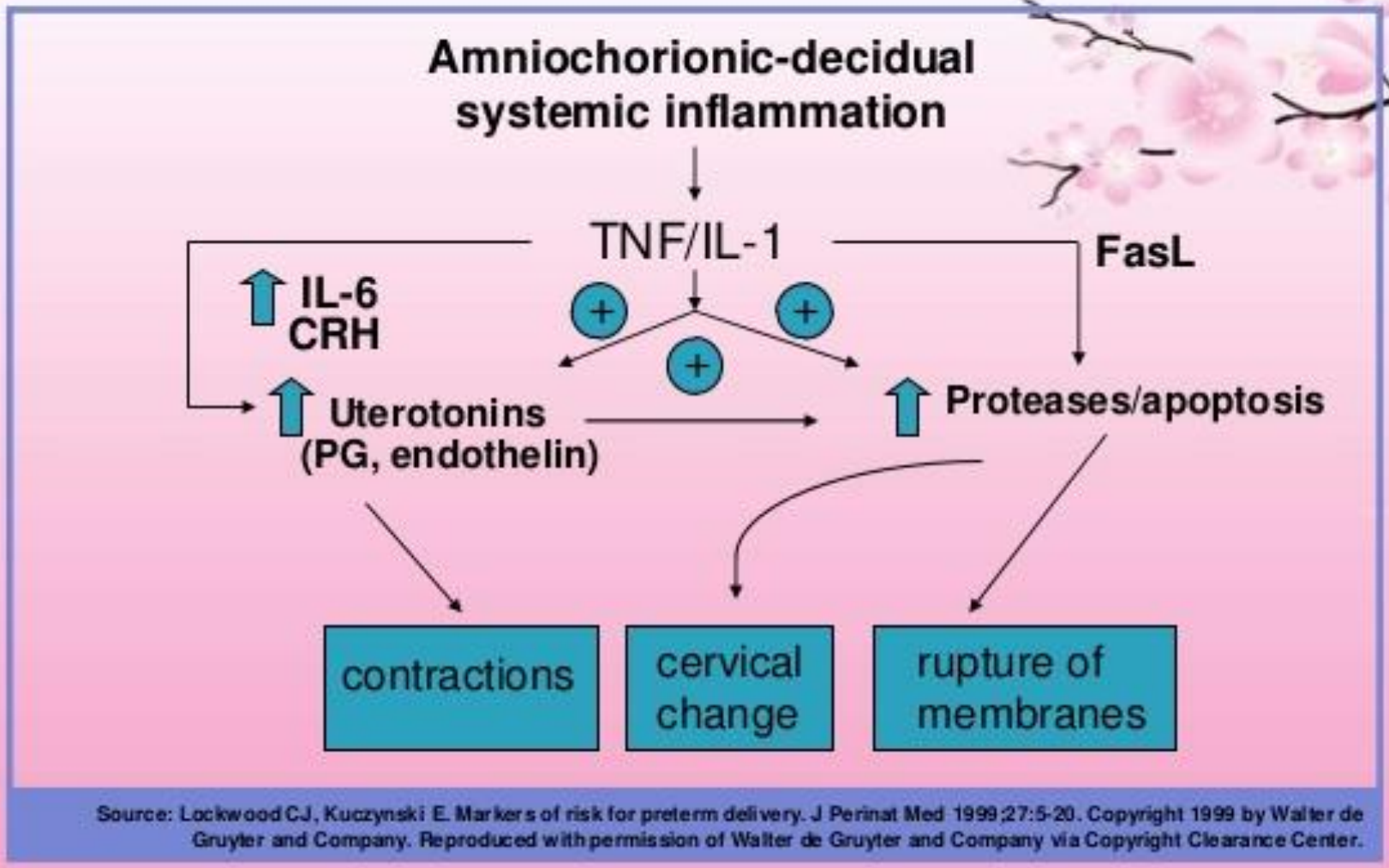
I. Fever (maternal temperature > 100.4 F or 37.8 C) and two or more of following:
II. Maternal tachycardia(>100 bpm).
III. Fetal tachycardia(>160 bpm).
IV. Uterine tenderness.
V. Foul odour of amniotic fluid.
VI. Maternal leukocytosis(>15000).

Subclinical chorioamnionitis :

- Occurs in women with preterm labour without signs and symptoms of overt infection.
- Detected by amniocentesis – not recommended by ACOG
- Determination of plasma CRP useful.

- Chorioamniotic infection by anaerobic bacteria usually does not cause systemic maternal signs or symptoms of sepsis.
- Foul smelling amniotic fluid.
- No postpartum morbidity as long as delivery is vaginal. However, if they require C/S postpartum endometritis is the rule.

Inflammation



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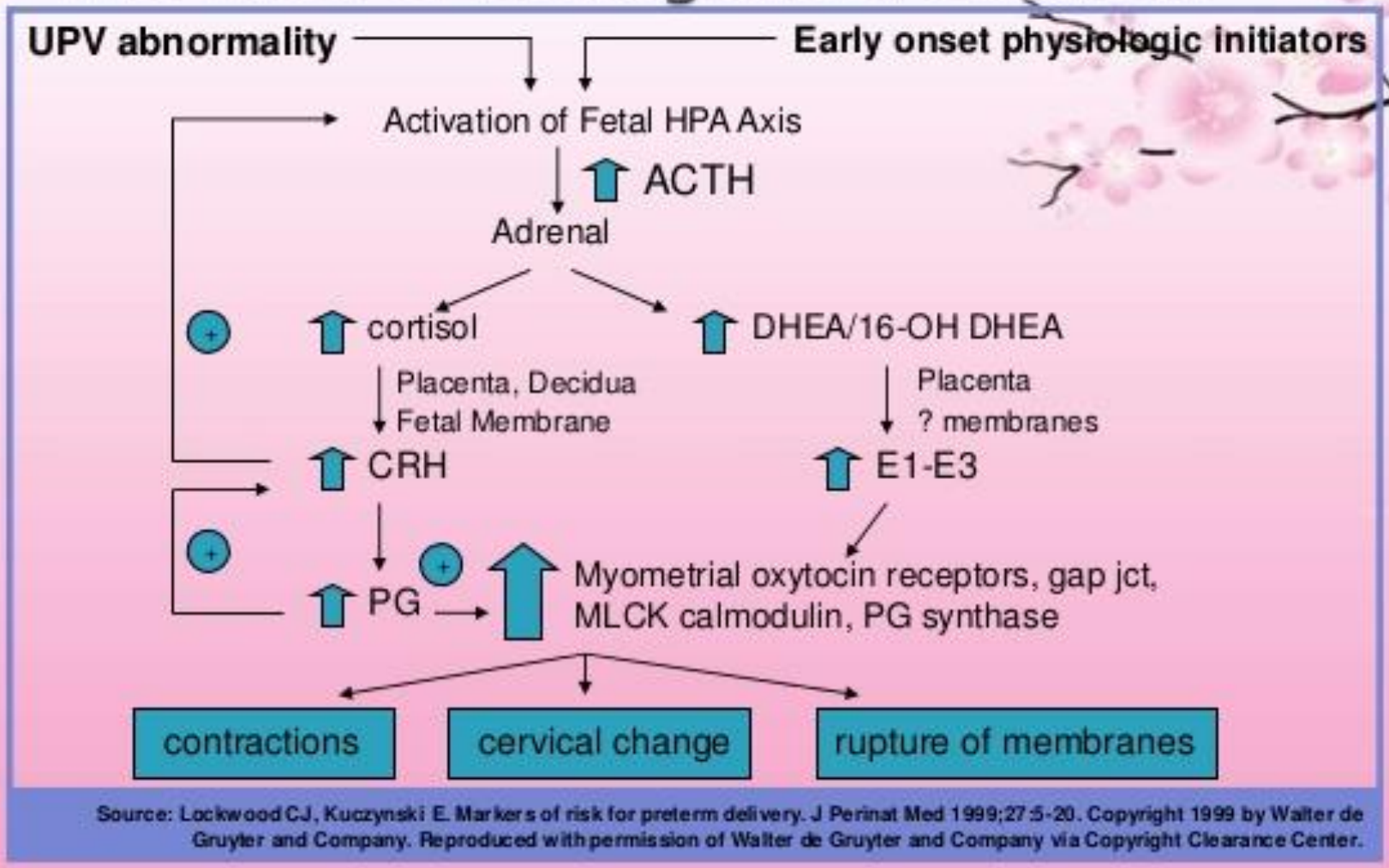
HPA Axis Activation: The Role of Estrogens & Cortisol



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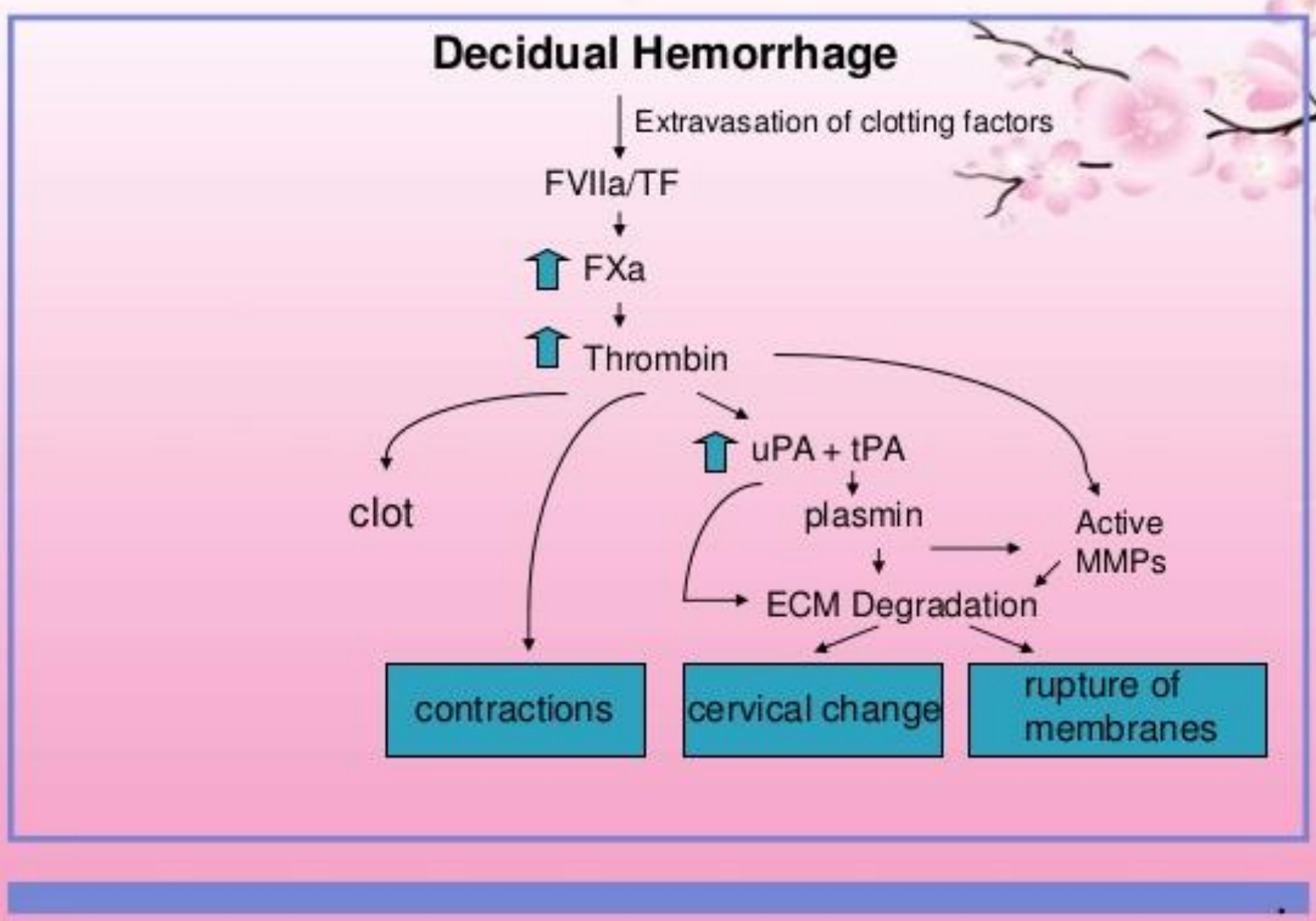
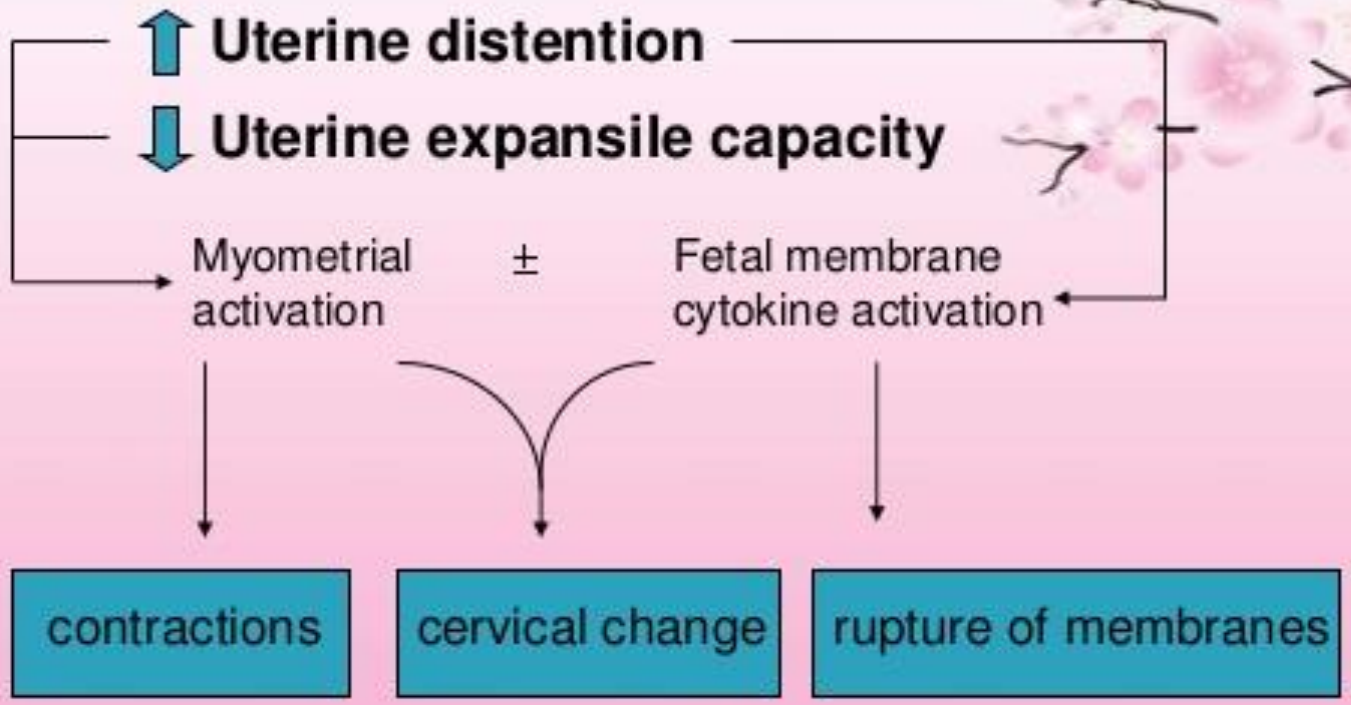
Decidual Hemorrhage



Abnormal Uterine Distension



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PREDICTORS OF PRETERM LABOUR???

PREDICTION...

1. Assessment of risk factors
2. Per vaginum examination to assess the cervical status
3. Ultrasound examination
4. Detection of fetal fibronectin in cervico vaginal secretions.
5. Home uterine monitoring.
6. Salivary estriol

RISK FACTORS

Previous preterm birth
Preterm premature rupture of membranes (PPROM)
Cervical incompetence
Cervical surgical procedures
Uterine anomalies
Multiple gestation
Polyhydramnios
Placental abruption
Vaginal bleeding
Smoking
Illicit drug use

PER SPECULUM EXAMINATION..

Any leakage PV/ Any abnormal discharge PV
Cervical length/ Dilatation of cervix

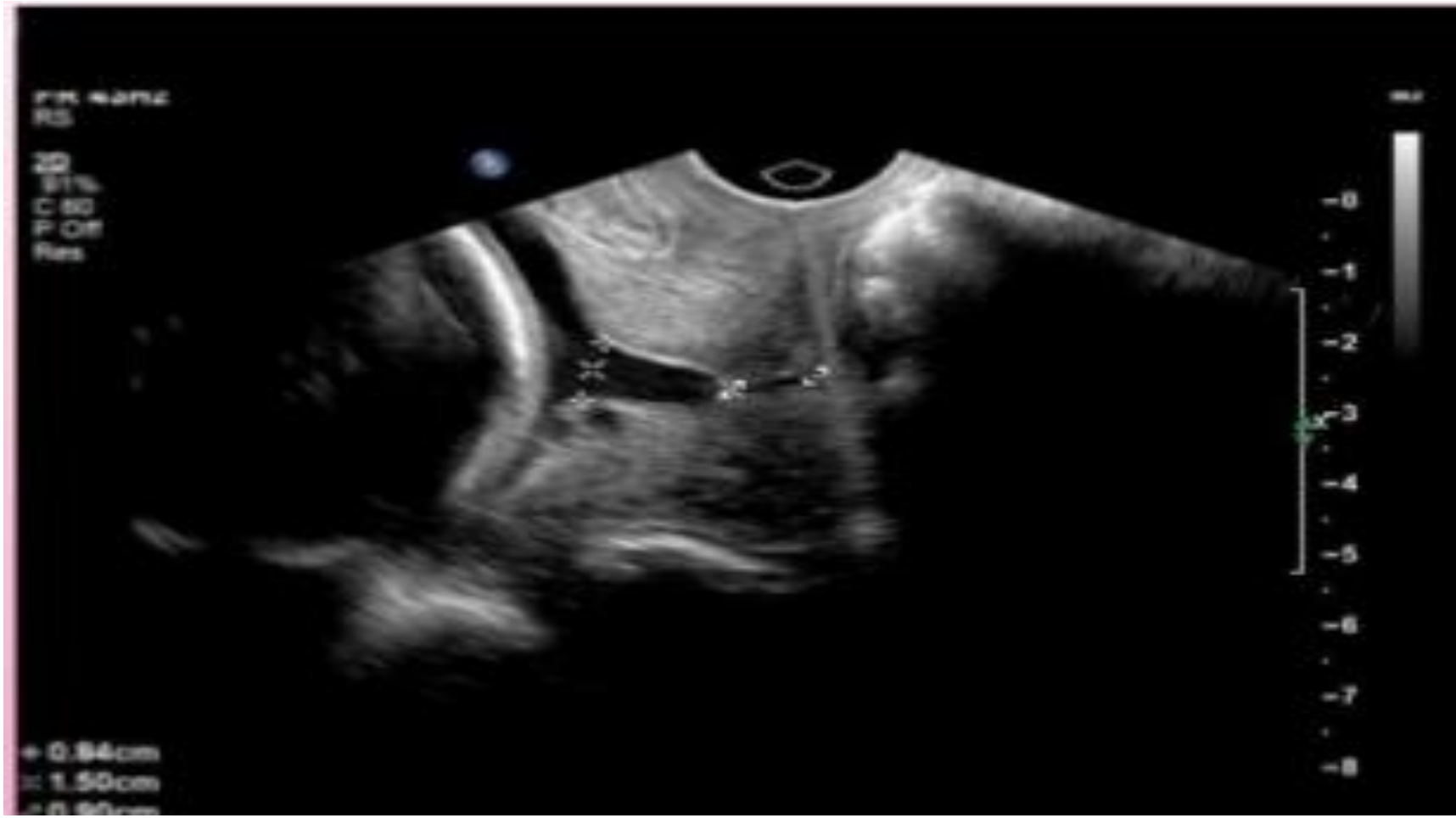
DIGITAL EXAMINATION:

- Cervical length
- Cervical dilatation
- Status of the membrane

Vaginal U/S

- Cervical length
- Internal os diameter
- Presence or absence of funelling – funnel length and width, percentage funelling
- Cervical index (1+ funnel length/ cervical length)

SONOGRAPHIC CERVICAL LENGTH...



Cervical length at 28 weeks and risk of PTL

Cervical Length	RR
<40mm	2.80
<35mm	3.52
<30mm	5.39
<26mm	9.57
<22mm	13.88
<13mm	24.94

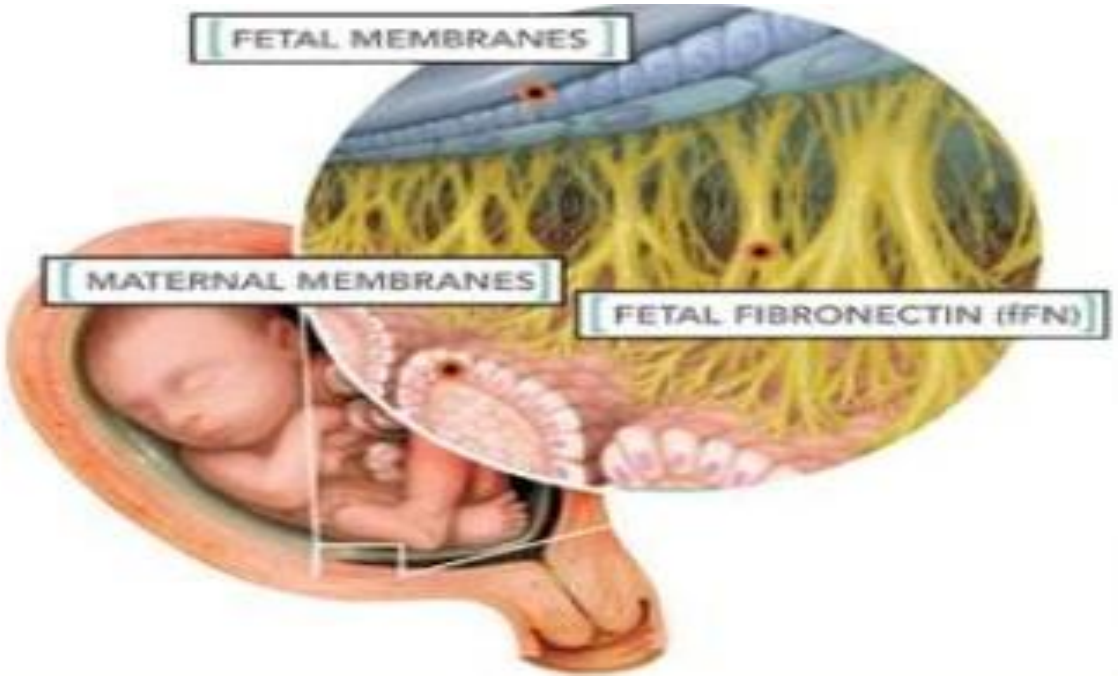
After 20 weeks gestation the cervix appears to shorten with median values falling from 35-40 mm at 24-28 weeks to 30-35 mm after 32 weeks

STUDD 18

FETAL FIRONECTIN..

- Fetal Fibronectin (fFN)- it is a glue like protein binding choriodecidual membrane.

- Normally present before 22 weeks and after 37 weeks.



- Present in vaginal secretions between 23-34 weeks and signifies onset of labor.

- Bedside test can be done – if negative it rules out preterm labor in next two weeks. False positives can result from manipulation of the cervix--digital or ultrasound exam, or coitus within 24 hrs--or from vaginal lubricants or medications.

- Poor predictive value in low risk women.

  fFN – 50ng/ml + cervical length of 25 mm shows significant risk.

Recurrence risk of spontaneous preterm birth at <35 wks according to cervical length and fetal fibronectin in women with a prior preterm birth.

Cervical length(mm)	Fetal Fibronectin positive (%)	Fetal Fibronectin negative (%)
25	65	25
26-35	45	14
>35	25	7

Salivary Estriol:

A single estriol concentration ≥ 2.1ng/ml had senstivity, specificity and positive and negative prredictive values of 57%, 78%, 9% and 98% respectively for prediction of preterm. ACOG does not currently recommend this test for screening women with preterm labour.

Other bio chemical markers includes:

Alpha feto proteins

Alkaline phosphatase

HCG

CRP

TNF α

IL-1, IL-6

CRH

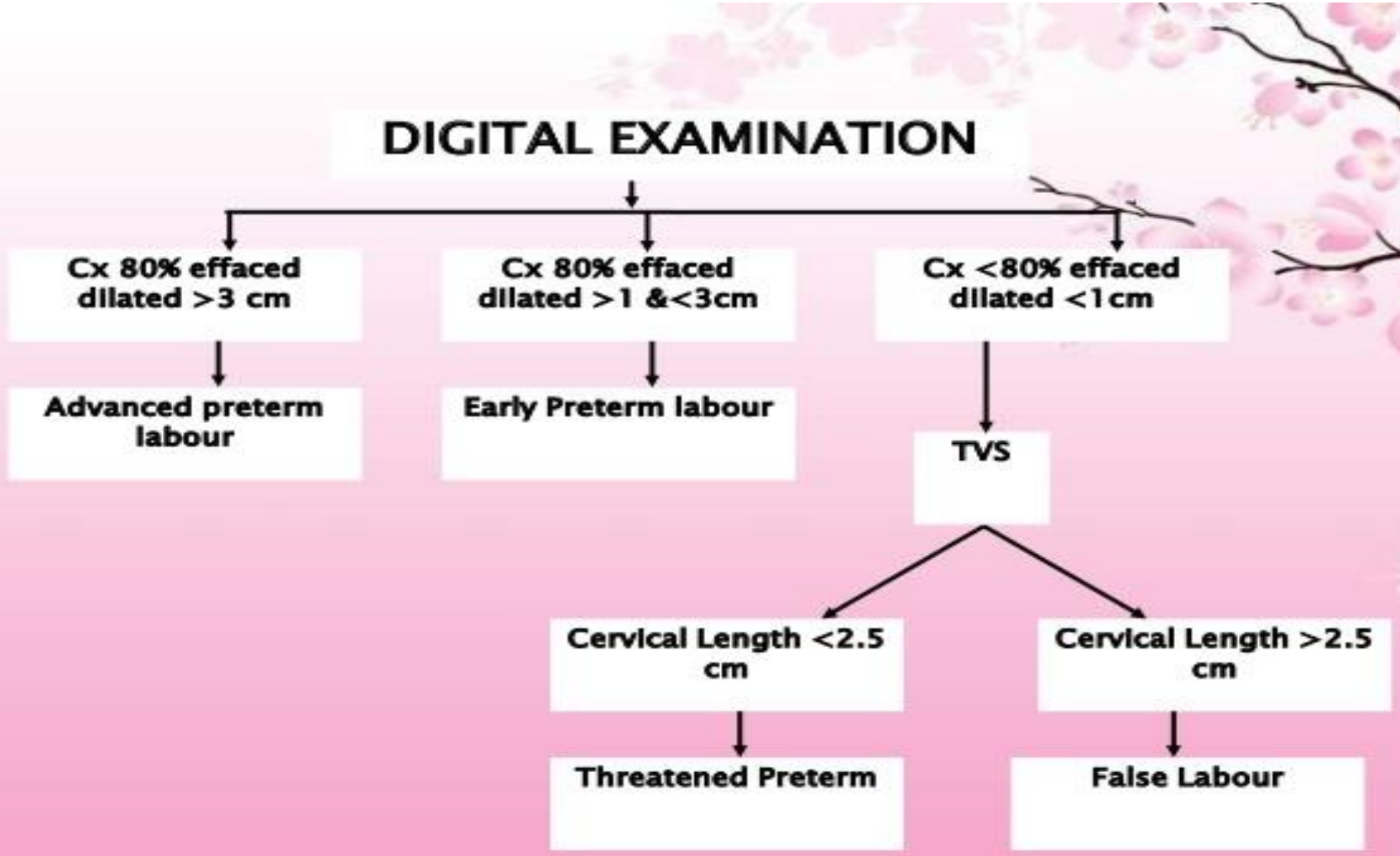
G-CSF

Metalloproteinase

DIAGNOSIS

- Occurrence of regular uterine contractions with or without pain (at least one in every 10 minute.)
- Cervical changes – effacement >80% and dilatation > 1cm.
- Length of cervix <2.5cm and funelling of the internal os.
- Pelvic pressure, backache and or vaginal discharge or bleeding.

DIAGNOSIS...


DIGITAL EXAMINATION
Cx 80% effaced dilated >3 cm
Cx 80% effaced dilated >1 &<3cm
Cx <80% effaced dilated <1cm
Advanced preterm labour
Early Preterm labour
TVS
Cervical Length <2.5 cm
Cervical Length >2.5 cm
Threatened Preterm
False Labour

INVESTIGATIONS

- Full blood count
- Urine for routine analysis, culture and senstivity
- Cervico vaginal swab for culture and fibronectin
- Ultrasonography for fetal well being, cervical length and placental localisation.
- Serum electrolytes and glucose levels when tocolytic agents are to be used.

MANAGEMENT OF PRETERM LABOUR...

- PREVENTION OF PRETERM LABOUR IF POSSIBLE
- TO ARREST PRETRM LABOUR IF NOT CONTRA INDICATED
- APPROPRIATE MANAGEMENT OF LABOUR
- EFFECTIVE NEONATAL CARE

Prevention of preterm labor...

PRIMARY PREVENTION

Public Educational Interventions:

- Greater awareness of the increased risk of preterm in ART could affect attitudes and choices made in fertility care.
- Reduction in prevalence of smoking.
- Use of condoms to prevent STIs.
- Recognition and early treatment of Depression.
- Promotion of long acting reversible contraceptives.

Public and proffessional policies:

Policies promulgated by fertility specialists intended to reduce the risk of higher order have been successful in Europe.

Policies to protect pregnant women include minimum paid pregnancy leave, time off for prenatal visits, exemption from night shifts and protection from work place hazards.

Social determinants of health.

- Promotion of school attendance and completion.
- Food security.
- Nutritional programmes
- Role of hospital and health providers as local leaders.

SECONDARY PREVENTION....

- Before pregnancy : interventions include
- Correction of mullerian anomalies.
- Preconceptional abdominal cerclage.
- Modification of maternal activities
- Nutritional suplements enhanced prenatel care
- Periodontal care
- Antibiotic treatment

PROGESTERONE…

- Progesterone is a hormone that inhibits the uterus from contracting. It is involved in maintaining pregnancy, especially early in gestation.
- Progesterone has been recommended for pregnant women with prior preterm birth.
- ✓ This use is based on reviews of clinical research that indicated that progesterone can prolong pregnancy for women at risk of preterm birth, based on having a prior spontaneous preterm birth.

MECHANISM OF ACTION..

At the Level of the Myometrium and Cervix:

It differentially regulates the expression of the two major isoforms of the progesterone receptor (PR) gene, PR-A and PR-B, leading at term to a PR-A/PR-B ratio that favors myometrial contractility and cervical effacement.

It interferes with oxytocin binding and signaling in a nongenomic fashion by binding directly with the transmembrane oxytocin receptor.

At the Level of the Placenta:

Interfere with cortisol-mediated regulation of placental gene expression, the most important of which is placental corticotropin-releasing hormone (CRH), which has been implicated as the “placental clock” regulating the timing of labor.

In Amniotic Fluid:

Upregulate an endogenous inhibitor of phospholipase A2, which is present in high concentrations in amniotic fluid. High levels of such an inhibitor would serve to limit the availability of arachidonic acid and thereby the production of prostaglandins.

At the Level of the Fetal Membranes:

Inhibit apoptosis (programmed cell death) in term fetal membranes both under basal conditions and in the setting of inflammation.

Progesterone may block proinflammatory cytokine-induced apoptosis within the fetal membrane, thereby preventing PPROM and subsequent preterm birth.

RECOMMENDATION FOR USE (ACOG OCTOBER 2012)

- A woman with a singleton gestation and a prior spontaneous preterm singleton birth should be offered progesterone supplementation starting at 16–24 weeks of gestation, regardless of transvaginal ultrasound cervical length, to reduce the risk of recurrent spontaneous preterm birth.
- Vaginal progesterone is recommended as a management option to reduce the risk of preterm birth in asymptomatic women with a singleton gestation without a prior preterm birth with an incidentally identified very short cervical length less than or equal to 20 mm before or at 24 weeks of gestation.

- Progesterone treatment does not reduce the incidence of preterm birth in women with twin or triplet gestations and, therefore, is not recommended as an intervention to prevent preterm birth in women with multiple gestations.
- Insufficient evidence exists to assess if progesterone and cerclage together have an additive effect in reducing the risk of preterm birth in women at high risk for preterm birth.

DOSE

- 17-OH Progesterone caproate :250 mg im weekly
- Micronized progesterone :200 mg vaginally

TREATMENT OF VAGINOSIS...

- Screening and treatment have not been shown to prevent preterm birth in both high and low risk women.

WILLIAMS

- It seems reasonable to screen and treat high risk women as early as possible.
- Low risk women with symptoms should be treated.
- DOC- clindamycin

STUDD 17

- Genital tract infection

Trichomonas vaginalis and C. trachomatis associated with preterm birth but no beneficial effect of treatment of asymptomatic women.

STUDD

- Treatment of asymptomatic bacteriuria prevents preterm delivery.
- Role of periodontal care to reduce preterm birth is uncertain.

GABBE

PROPHYLACTIC CERCLAGE

Cerclage is effective treatment for short cervical length(less than 15-25mm) with history of preterm birth.

In women with prior preterm birth cerclage is paradoxically most beneficial in shortest cervical length(<15mm)

Cerclage is indicated in history of cervical injury,progressive cervical shortening <25mm despite progesterone therapy.

GABBE 6th Edition

Measures to arrest preterm labour...

- As majority of preterm is associated with maternal and/or fetal complicating factor where early expulsion of fetus may be beneficial.

- About 10-20% of cases where fetus is not compromised ,maternal condition remains good and membranes are intact the following regime may be instituted in an ettempt to arrest preterm labour.

- ✓ Bed rest
- ✓ Hydration and sedation
- ✓ Tocolytics
- ✓ Cervical cerclage
- ✓ Prophylactic antibiotics

- ✓ Glucocorticoid therapy

TOCOLYSIS....

- It is reasonable not to use tocolytic drugs, as there is no clear evidence that they improve outcome. However, tocolysis should be considered if the few days gained would be put to good use, such as completing a course of corticosteroids, or in utero transfer.
- Not associated with a clear reduction in perinatal or neonatal mortality, or neonatal morbidity. Most authorities do not recommend use of tocolytics at or after 34 weeks' .

There is no consensus on a lower gestational age limit for the use of tocolytic agents.

- RCOG Guideline Grade A recommendation 2011

Tocolysis in multiple gestation- do not reduce the risk of preterm delivery or improve neonatal outcome.

ACOG practice bulletin 2012

CONTRAINDICATIONS TO TOCOLYSIS …

Gestation more than 34 weeks
Significant vaginal bleeding
Suspected fetal asphyxia
Intra amniotic infection
IUD or lethal anomaly
Maternal indication

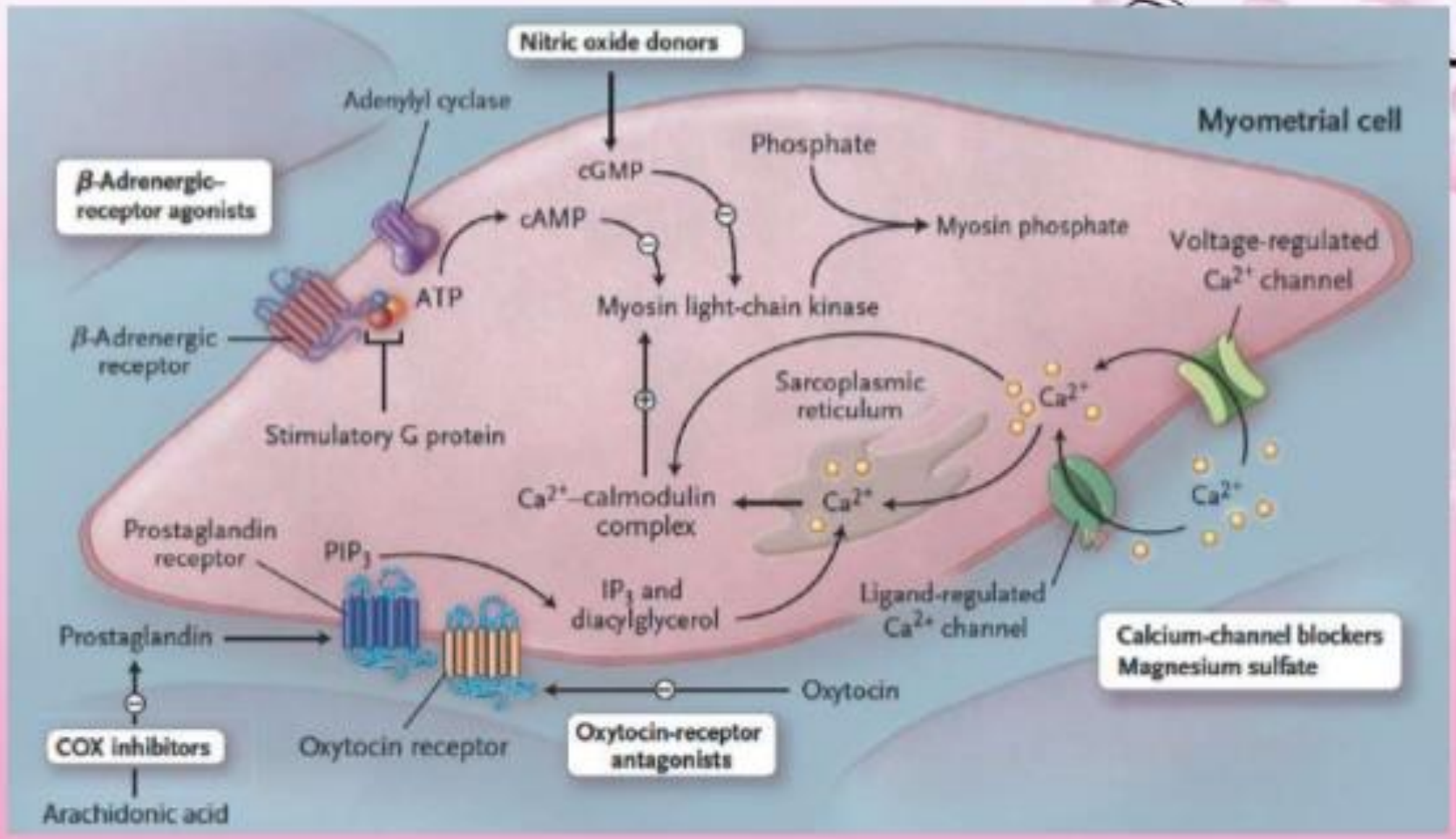
- Uncontrolled diabetes
- Severe anaemia
- Cardiac disease
- Severe preeclampsia or eclampsia

Imminent delivery
Maternal hypotension systolic <90 mmHg

TOCOLYTIC AGENTS

- MgSO4
- Beta agonist
- Calcium channel blockers
- Prostaglandin synthase inhibitors
- Nitroglycerine
- Diazoxide
- Oxytocin receptor antagonist
- Ethyl alcohol.

MECHANISM OF ACTION OF TOCOLYTICS



MAGNESIUM SULPHATE

- Acts by competitive inhibition to calcium ion either at motor end plate or at cell membrane.
- Decreases acetylcholine release and its sensitivity at motor end plate.
- Direct depressant action on uterine muscle
- In addition it has
  - A) anti oxidant properties
  - B) anti inflammatory properties

- Magnesium sulphate is ineffective at delaying birth or preventing preterm birth, and its use is associated with an increased mortality for the infant.

- Reduces the severity and risk of cerebral palsy if administered when birth is anticipated before 32 weeks of gestation.

Williams 23 ed

DOSAGE...

- 4gm loading dose followed by continuous infusion of 2gm/hr usually arrests labour.

- Mg levels to inhibit contractions- 8-10meq/l

10 ampoules are dissolved in 500 ml saline

↓

2 gm in 100 ml

↓

100 ml/hr

↓

1.6 ml in 1 minute

↓

16 drops– 1 ml
25 drops approx. equals to 1.6 ml

↓

25 drops/minute

MATERNAL EFFECTS:

Magnesium has a low rate of serious maternal side effects, but flushing, nausea, vomiting, headache, generalized muscle weakness, diplopia, and shortness of breath occur frequently. Chest pain and pulmonary edema have been reported with a frequency similar to that of β-mimetics.

NEONATAL EFECTS: Lethargy, hypotonia and respiratory depression may occur. No significant effects on rates of pediatric mortality or other neurological impairements or disabilities.

Gabbe

Monitoring

- ✓ By measuring urine output/hr
- ✓ DTR's
- ✓ Respiratory rate, presence of basilar crepts.

Loss of DTR- 10meq/l

Repiratory depression- 12meq/l

Contraindication

- ✓ Patients with myasthenia Gravis.
- ✓ Impaired renal function

B- SYMPATHOMIMETIC AGENTS

MOA: Convert ATP into cAMP in the cell causing decrease of the free calcium ion.

- Commonly used drugs are ◦ Ritodrine ◦ Terbutaline ◦ Isoxsuprine Only ritodrine has been approved by FDA

- Beta-agonists reduce the risk of giving birth within 48 hours but there is no clear evidence that they are any more effective at preventing preterm birth than other tocolytic drugs. .

Terbutaline

- 5 mg is dissolved in 500 ml RL (10ug/ml)
- Started at 5 ug/min (0.5 ml) Increased gradually by 5 ug/mt every 10-20 mts until contraction stop or intolerable side –effects appear.
- Max. dose is 30 ug/min.
- 0.25 mg every 3-4 hrs sub- cutaneously can also be given.

Ritodrine

- Started by i/v infusion in 5%D.
- 50 ug/min.
- Increased by 50 ug/mt until contractios stop or toxicity develops
- Max. dose 350 ug/min
- Continued for 12 hrs.

Isoxsuprine

- Orally effective long acting selective β stimulant.
- Direct smooth ms. Relaxant property.

- Dose
- ✓ Initial IV drip 100mg in 5%D .
- ✓ Rate o.2ug/min gradually increased to0.8ug /min.
- ✓ To continue at least 2hrs after contraction ceases. Maintaince-10mg 6hrly im for 24hrs.
- ✓ Oral 10mg 6-8hrly

SALBUTAMOL

- IV infusion 5mg in 5%D @10ug/min intially gradually increased upto50 ug/min .
- Maintainance-4mg tab 6hrly.

Side effects

- Maternal: palpitation, tremors, headache, chest pain, pulmonary edema, myocardial ischemia, arrhythmia, and even maternal death.
- Fetal : arrhythmia, cardiac septal hypertrophy, hydrops, pulmonary edema, and cardiac failure. hypoglycemia, hypocalcemia, periventricularintraventricular hemorrhage, and fetal and neonatal death.
- Contraindications Diabetes, cardiac disease, hypertension.

CALCIUM CHANNEL BLOCKERS The use of CCBs compared with other tocolytic agents was associated with reduction in number of women giving birth within 7 days of receiving treatment and before 34 weeks of gestation.

Decreased incidence of neonatal RDS, NEC, IVH than other tocolytic drugs.

When compared with other tocolytic agents associated with fewer adverse effects and less need to stop trearment because of adverse effects.

Evidence level1+

Nefidipine

Route Oral

Dose 20 mg stat If contractions persist after 30 minutes: Repeat 20 mg If contractions persist after a further 30 minutes: Repeat 20 mg

Maintenance Dose If blood pressure is stable, 20 mg every 6 hours for 48 hours. Further maintenance therapy ineffective Maximum dose is 160 mg/day

Comments Do not use sustained release formulation Use cautiously with magnesium sulphate

Side Effects

- Hypotension
- Headache
- Facial flushing
- Cardiac failure
- Tachycardia,
- palpitations
- Nausea
- Dizziness

Monitoring

- Cardiotocograph monitoring until contractions ceases.
- Pulse rate, respiratory rate and blood pressure monitoringevery thirty minutes for first hour, thensecond hourly for 24 hours, thenfour hourly
- Measure and record temperature every four hours

Contraindications

Hypotension and preload- dependent cardiac lesions, such as aortic insuffiency.

Compared with B- agonists, nifedipine is associated with improvement in neonatal outcome.

RCOG Guideline Grade A recommendation 2011

INDOMETHACIN..

- COX-2 inhibitors compared with magnesium sulphate-no difference between oral COX-2 inhibitor and intravenous magnesium sulphate in delaying preterm labour.
- Fetal risk:

Premature closure of the ductus.

Renal and cerebral vasoconstriction.

Necrotising enterocolitis

Neonatal pulmonary hypertension Common with high dose and prolonged exposure.

RCOG 2012

MATERNAL SIDE EFFECTS

- Nausea, heartburn, and vomiting are common but usually mild.
- Less common but more serious complications include gastrointestinal bleeding, prolonged bleeding time, thrombocytopenia, and asthma in aspirin-sensitive patients.
- Prolonged treatment with NSAIDs can lead to renal injury, especially when other nephrotoxic drugs are used. Hypertensive women may rarely experience acute increased blood pressure after indomethacin treatment.
- The antipyretic effect of an NSAID may obscure a clinically significant fever.

Dosage :50mg PO followed by 25 mg 6 hourly for 48 hours

Maximum dose: 200mg/day.

Appears to be a relatively safe and effective tocolytic agent. Can be used as a second-line tocolytic agent in early gestational age preterm labors.

Indomethacin may be a first-line tocolytic in Associated polyhydramnios.

CONTRAINDICATION..

- renal or hepatic disease,
- active peptic ulcer disease,
- poorly controlled hypertension,
- asthma, and
- coagulation disorders.

ATOSIBAN

Atosiban or nifedipine seem to have comparable effectiveness in delaying birth for upto seven days.

RCOG Guideline Grade A recommendation 2011

FDA has denied approval of atosiban because of concerns regarding efficacy and fetal-newborn safety.

ATOSIBAN

- Oxytocin antagonist
- Blocks myometrial oxytocin receptors.
- Inhibits intracellular calcium release, PG's release, inhibiting myometrial contraction.
- Half life is 12 mts

Side-effects

- Nausea
- Vomiting
- Chest Pain

Atosiban – compared with placebo no clear difference in perinatal mortality.

Increase in deaths in the first year of life.

Evidence level1+

Atosiban - compared with beta-agonists- has: Little difference in the effect of these agents on delayed delivery.

Fewer maternal adverse effects than beta-agonists.

Not cost effective Iitial bolus of 6.75 mg over one minute, followed by an infusion of 18 mg/hr for 3 hrs, then 6 mg/hr for upto 45 hrs.

NITRIC OXIDE DONORS

- In randomized clinical trials, nitroglycerin administered orally, transdermally, or intravenously was not effective or showed no superiority to other tocolytics.
- Although there was a reduction in delivery before 37 weeks but no clear impact on birth before 3234 weeks.

Evidence level1

- In addition, maternal hypotension was a common side effect.

- Given as Transdermal patches
- A specific amount of medication is released proportional to the size of patch.
- Varies B/W 0.1-0.8 mg/hr.
- A low dose patch is started (0.2 mg/hr)
- Add 0.1 mg/hr every hr, if no response.

Intra venous dose

- 100 ug Bolus followed by continuous 1/v infusion at a rate of 1 ug /Kg/ minute.

Maintenance Tocolysis Is Not Recommended.

Using multiple tocolytic drugs appears to be associated with a higher risk of adverse effects and so should be avoided.

RCOG Guideline Grade A recommendation 2011

CORTICOSTERIODS...

- Antenatal corticosteroids are associated with a significant reduction in rates of RDS, neonatal death NEC and intraventricular haemorrhage.

Two 12 mg doses of betamethasone given IM 24 hours apart, Or Four 6 mg doses of dexamethasone given IM 12 hours apart.

Dexamethasone : leukomalacia and 2yr neurodevelopmental abnormality.

MOA of steroids.

1. Stimulates type II pneumocyctes to produce surfactant.

2. Structural development of lungs

3. Accelerated maturation of fetal intestines (Prevent NEC). effect on myocardium (Prevent IVH)

Repeated Dose

Increased sepsis in PPROM.

Restricted fetal body and brain growth .

Adrenal Suppresssion.

Adequate data do not exist to demonstrate benefit from the use of antenatal corticosteroids in multiple gestation. However, because of clear benefit in singleton gestation, most experts recommend their use in preterm multiple gestations.

ACOG practice bulletin2012

ANTIBIOTICS

- All patients in preterm labor are considered at high risk for neonatal GBS sepsis and should receive prophylactic antibiotics regardless of culture status.
- CDC Advises Screening All Pregnant Women for Group B Strep 35-37weeks
- Should not be used to prolong gestation or improve neonatal outcome in women with preterm labour and intact membranes.
- ACOG practice bulletin 2012
- The goal of this strategy is to prevent neonatal sepsis, and not to prevent preterm birth.

- In cases of subclinical chorioamnionitis, determination of CRP is useful.
- Value < 0.9 mg/dl- continue expectant management.
- Value between 0.9-1.6- repeat in 12-24 hrs depending on clinical situation.
- Value of 3-4 mg/dl-almost certainly indicative of infection.

ANTIBIOTICS

- Penicillin 5 million units (mU) IV initial dose followed by 2.5 mU every 4 hrs until delivery.

Or

- Ampicillin 2g IV every 6 hrs
- Patients allergic to penicillin, cefazolin 2g IV initial dose followed by 1g IV every 8 hrs.

Or

- Clindamycin 900 mg IV every 8 hrs and erythromycin 500 mg IV every 6 hrs.
- Women with h/o anaphylactic reaction to penicillin vancomycin 500 mg IV every 8 hrs.

TRK, VITAMIN K , PHENOBARBITONE

- The use of thyrotropin-releasing hormone (TRH), vitamin K and phenobarbitone to improve neonatal outcome has been studied in randomized trials, but has not been shown to be beneficial.

RESCUE CERCLAGE(RCOG 2011)

- The decision to place a rescue suture should be individualized, taking into account the gestation at presentation, as even with rescue cerclage the risks of severe preterm delivery and neonatal mortality and morbidity remain high. A senior obstetrician should be involved in making the decision.
- Insertion of a rescue cerclage may delay delivery by a further 5 weeks on average compared with expectant management/bed rest alone. It may also be associated with a two-fold reduction in the chance of delivery before 34 weeks of gestation. However, there are only limited data to support an associated improvement in neonatal mortality or morbidity.
- Advanced dilatation of the cervix (more than 4 cm) or membrane prolapse beyond the external osappears to be associated with a high chance of cerclage failure.

MANAGEMENT DURING LABOUR

DURING FIRST STAGE

-The patient is put to bed

-Ensure adequate oxygenation

-Strong sedatives to be avoided

-Epidural analgesia is of choice

-Labour should be watched by intensive clinical monitoring

-Continous electronoc monitoring of the labour

-In case of delay or anticipating a traumatic vaginal delivery cs is to performed

MANAGEMENT CONTD...

DURING SECOND STAGE

-The birth should gentle and slow

-Episiotomy may be done under LA to minimise head compression

-Tendency to delay is curtailed by low forceps

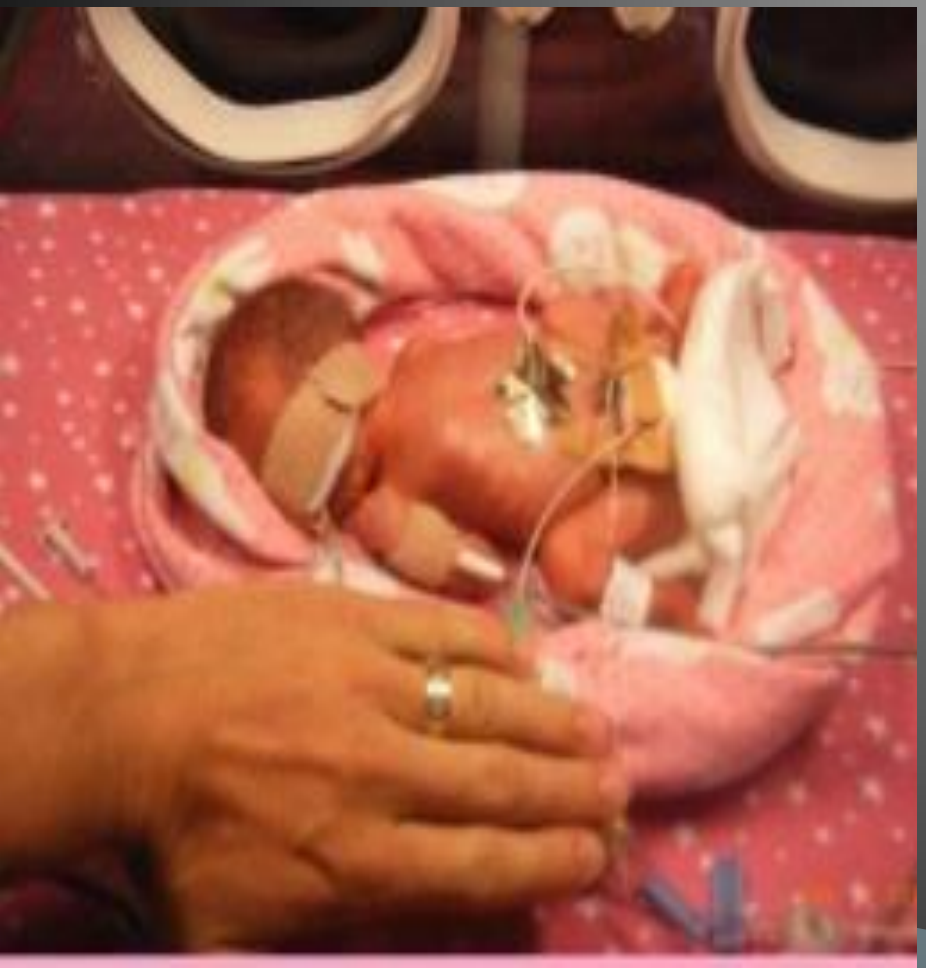
-Cord is clamped immediately at birth to prevent hypervolaemia and hyperbilirubinaemia to shift the baby to ICU

CARE OF THE PRETERM NEONATE

- The cord is to be clamped quickly.
- The cord length is kept long.
- The air passage should be cleared of mucus promptly and gently.
- Adequate oxygenation.
- Maintainance of temp to prevent hypothermia.
- Inj.vit k 1mg im

Survival in Premature Infants

Survival chance is directly proportional to the maturity



- 26 wks – 80%
- 27 wks – 90%
- 28-31 wks – 90 to 95%
- 32-33 wks – 95% 34-36 wks – approaches term survival rates

Williams

Thank You!!!