

Clinical Management of Obstetric Complications I

(2nd Trimester Miscarriage, Preterm
Labour, Preterm Delivery, pPROM)

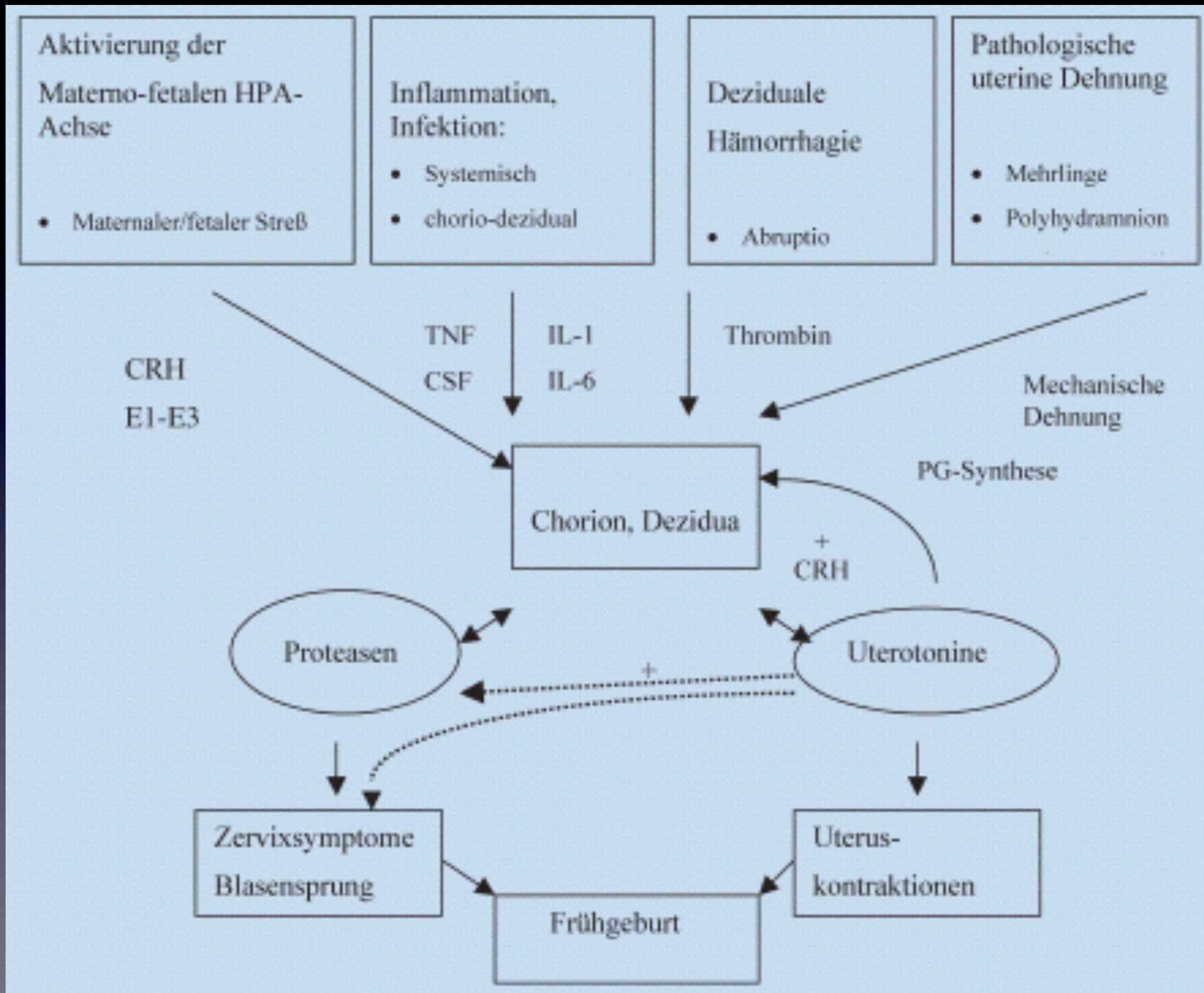
Frank Reister

*Division of Obstetrics, Dept. of Obstetrics & Gynecology
University Hospital Ulm, Germany*

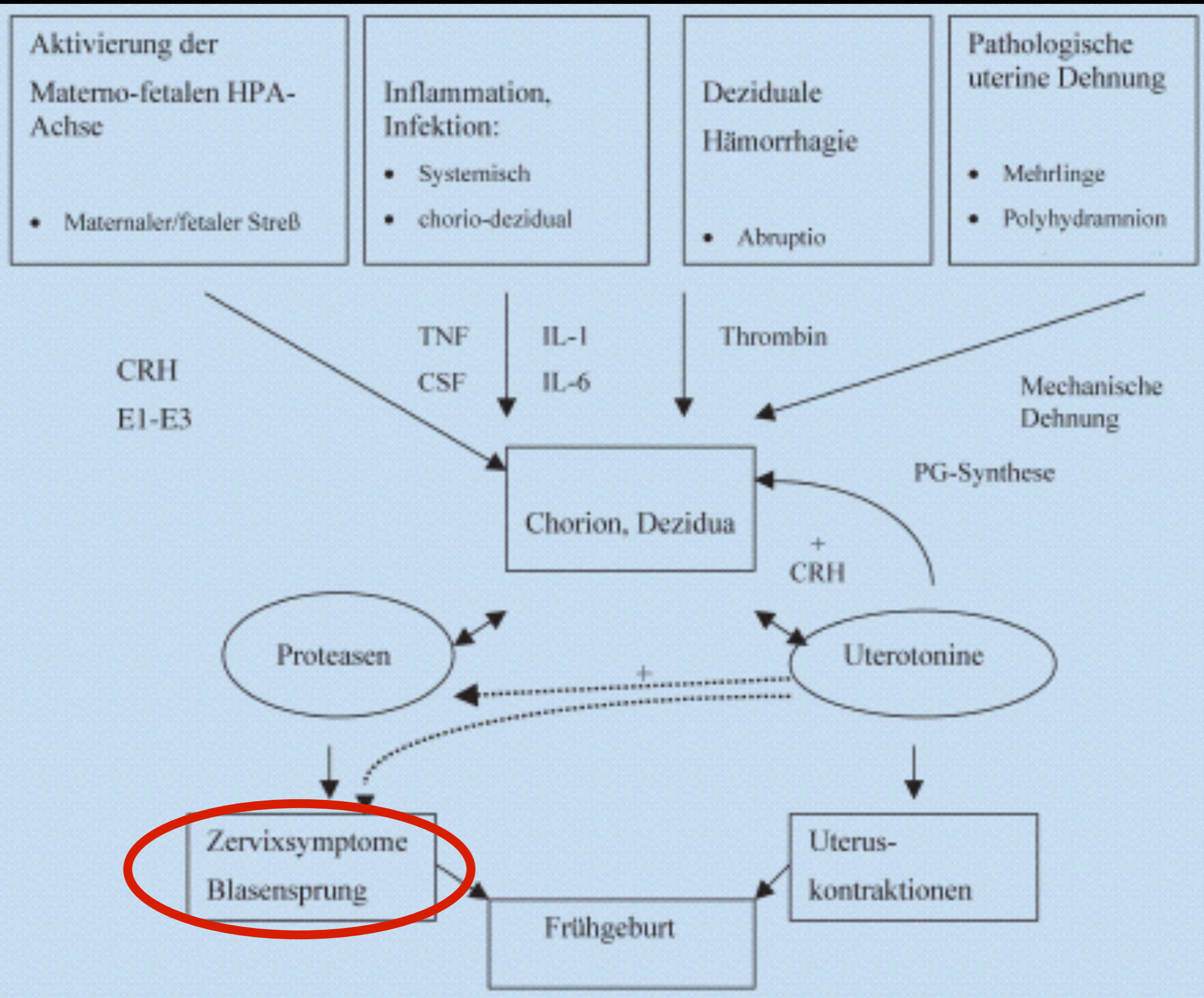
PTD - how often?
(Baden-Württemberg 2012)

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- < 37 wks: 7,8%
- < 34 wks: 2,3%
- < 32 wks: 1,3%
- < 27 wks: 0,4%

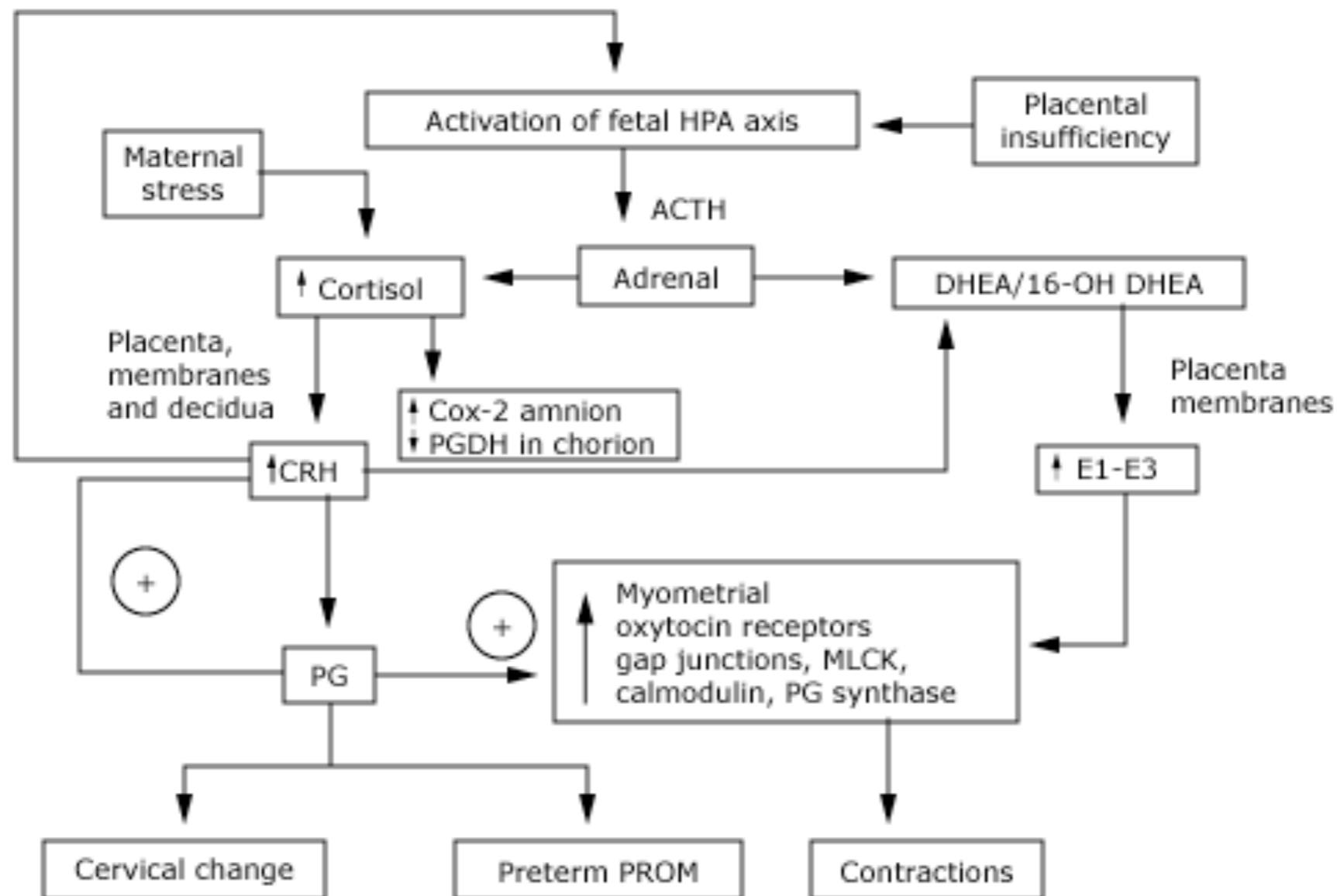


What leads to PTD?



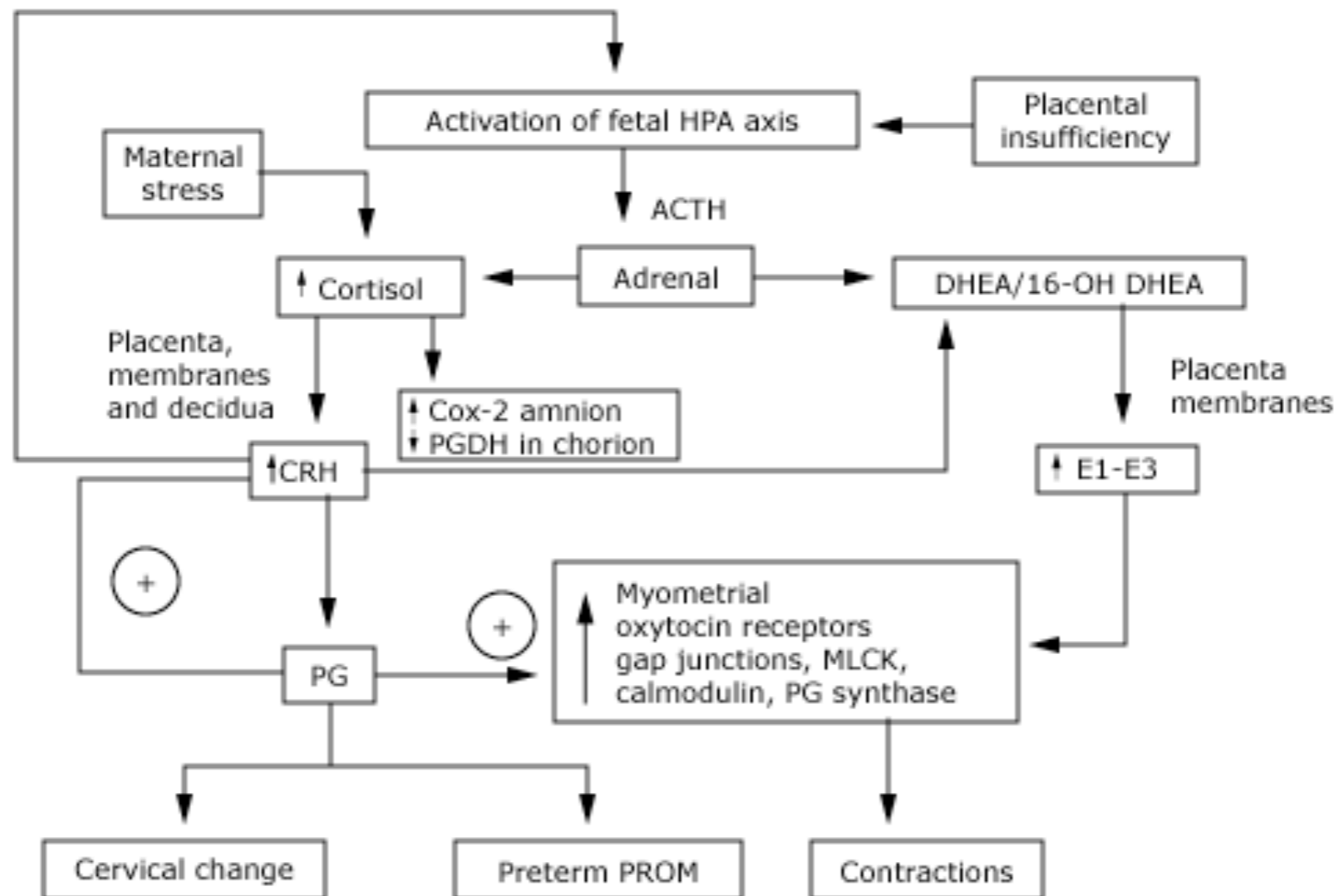
What leads to PTD?

Pathogenesis of preterm birth



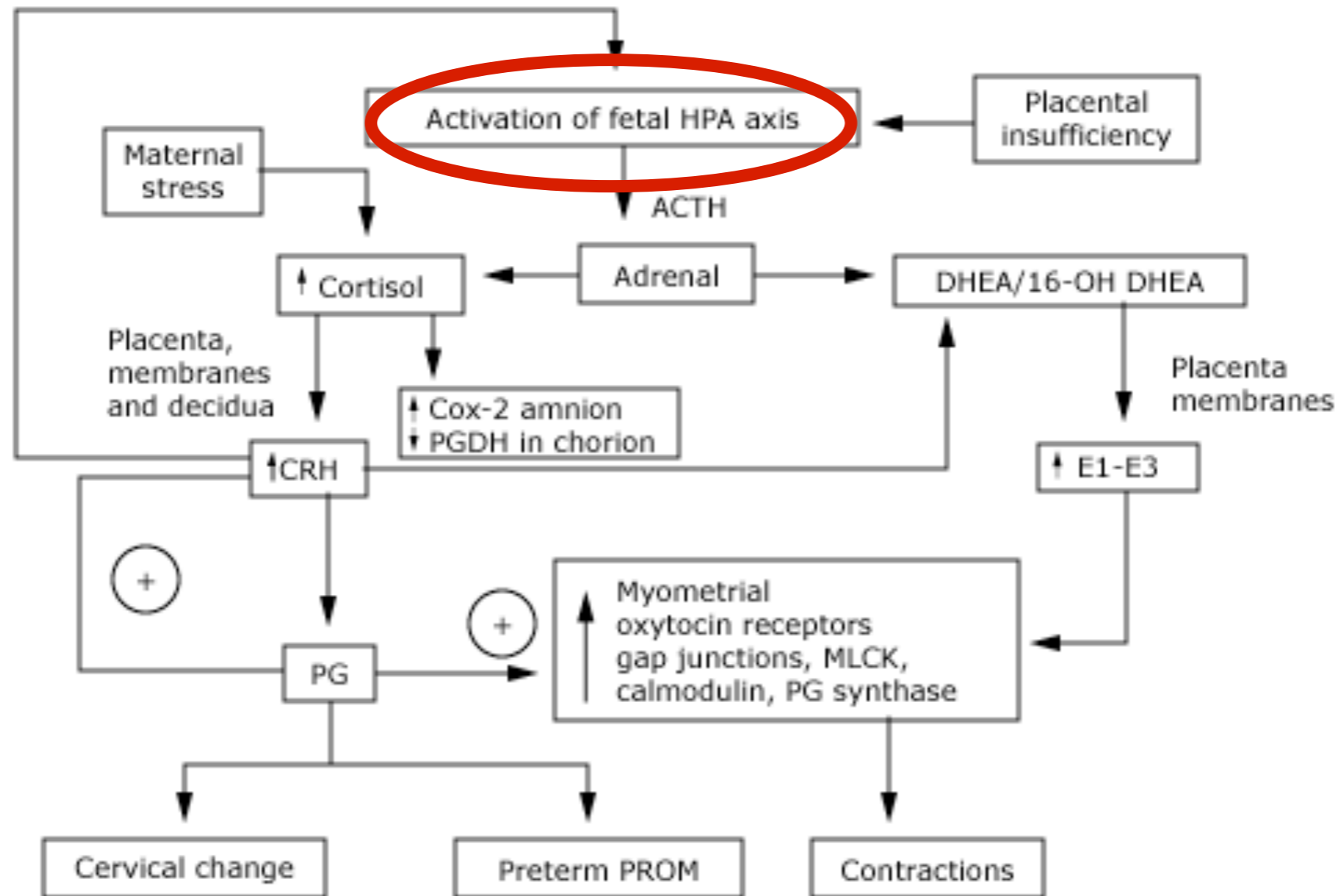
HPA: hypothalamus-pituitary-adrenal; ACTH: Adrenocorticotrophic hormone 16-OH; DHEA: 16-hydroxydehydroepiandrosterone; E1 - E3: estrogen, estradiol, estrone; CRH: Corticotropin releasing hormone; Cox-2: Cyclooxygenase 2; PG: Prostaglandin; MLCK: Myosin light chain kinase; PROM: Premature rupture of membranes; PGDH: Hydroxyprostaglandin dehydrogenase

Pathogenesis of preterm birth - maternal and/or fetal stress



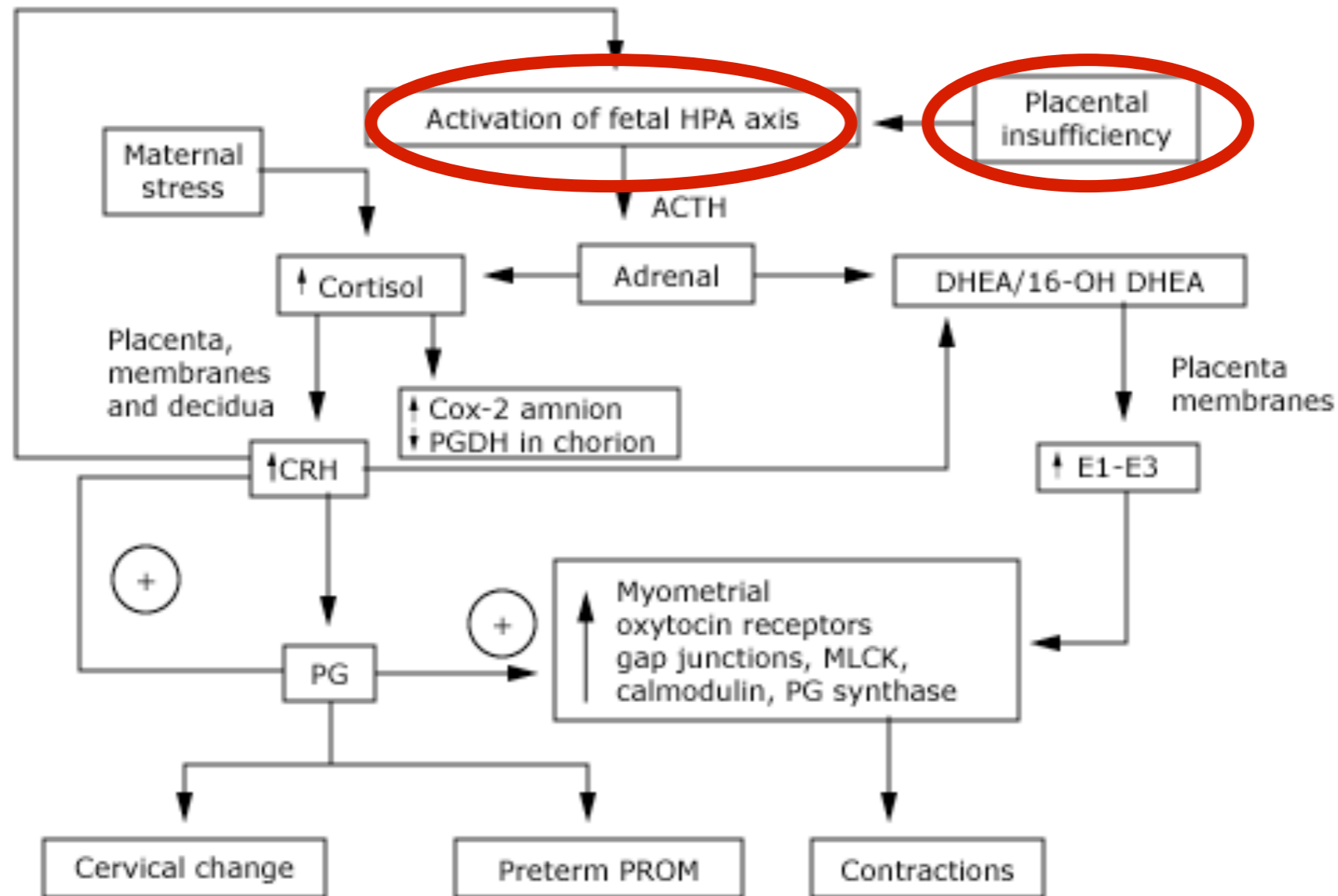
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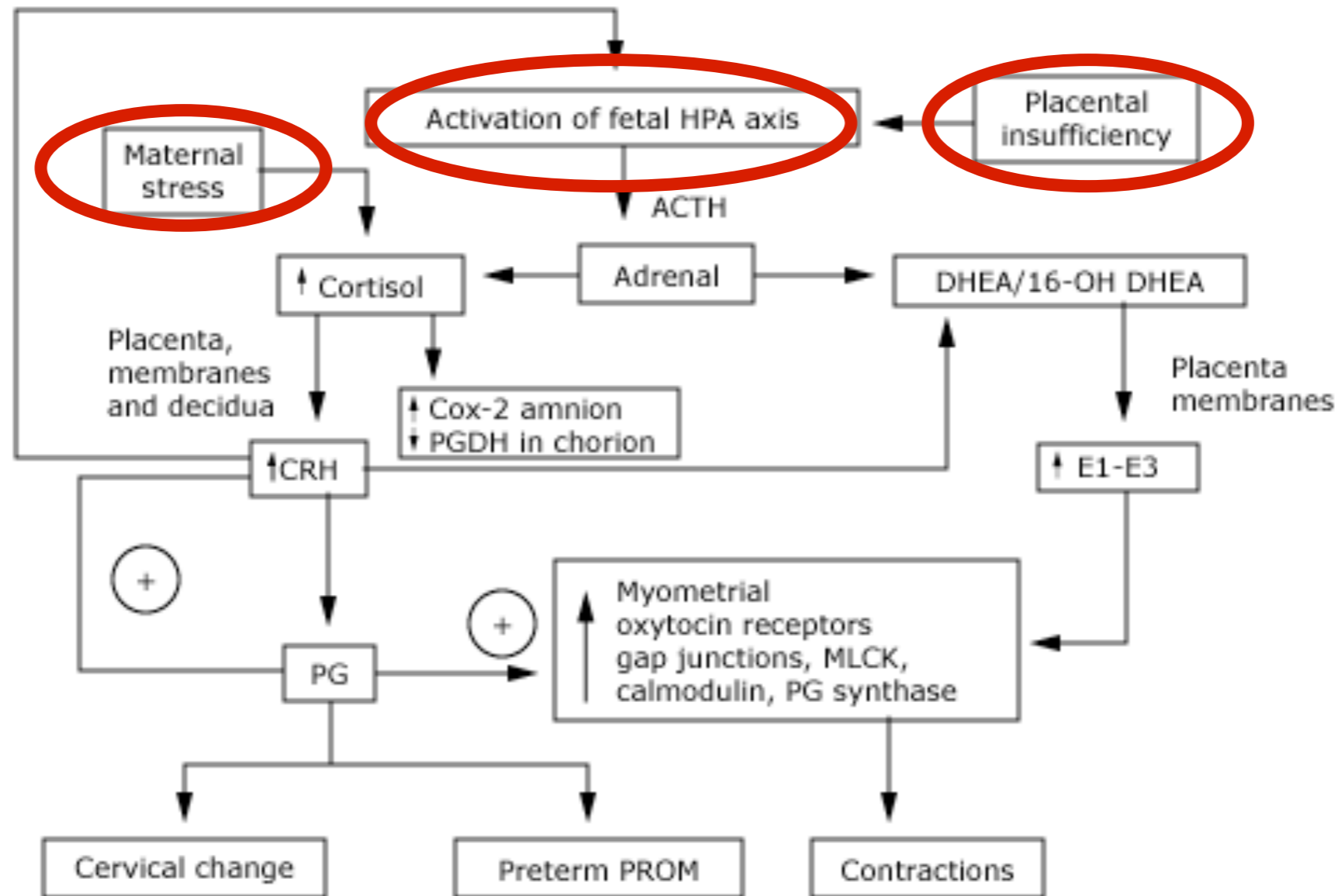
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Infection/Inflammation

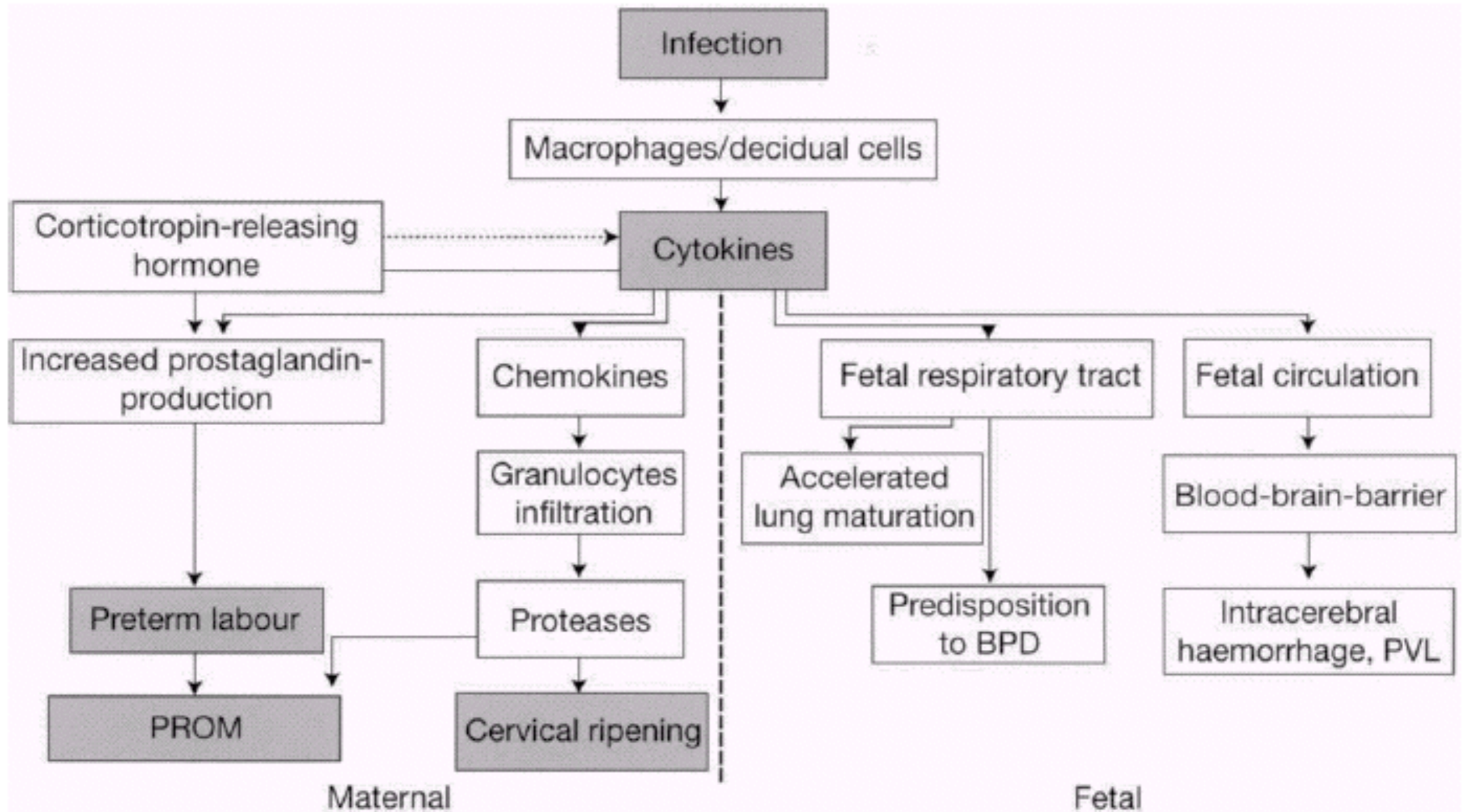


Fig. 1. Association between infection, cytokines and preterm delivery.

Risk Factors

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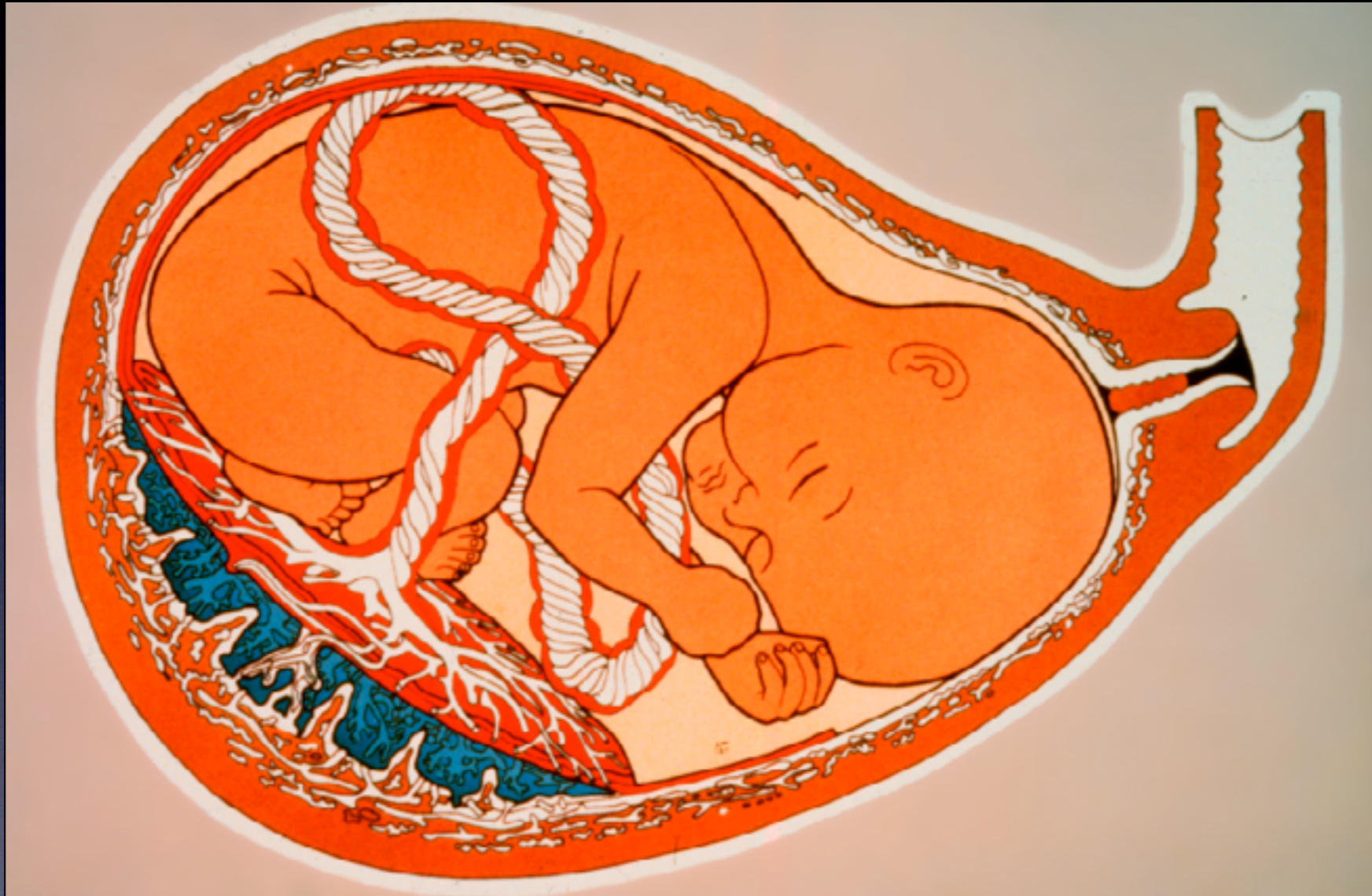
- Hx of PTD: OR 5,6_{Bloom 2001}
but: < 10% of all PTD_{Adams 2000}
- Hx of early miscarr.: OR ~ 2,5_{Hx of 2 early miscarr. – Swingle 2009}
- Hx of late miscarr.: PTD ~ 35%_{Goldenberg 1993, Edlow 2007}
- Short (< 6 months) or long (> 10 yrs) interpreg. interval
- Bleed. in 1st trim.: OR_{32-36 wks} ~ 2, 28-31 wks ~ 3_{Lykke 2010}
- Social/'lifestyle' risk factors (young, poor, drug abuse, under-/overweight...)
- Bacterial Vaginosis_{1st trim.}: OR 6_{Riduan 1993}
- Reduced cervical length
- Cervical ripening

Prediction of PTD: Cervical Length

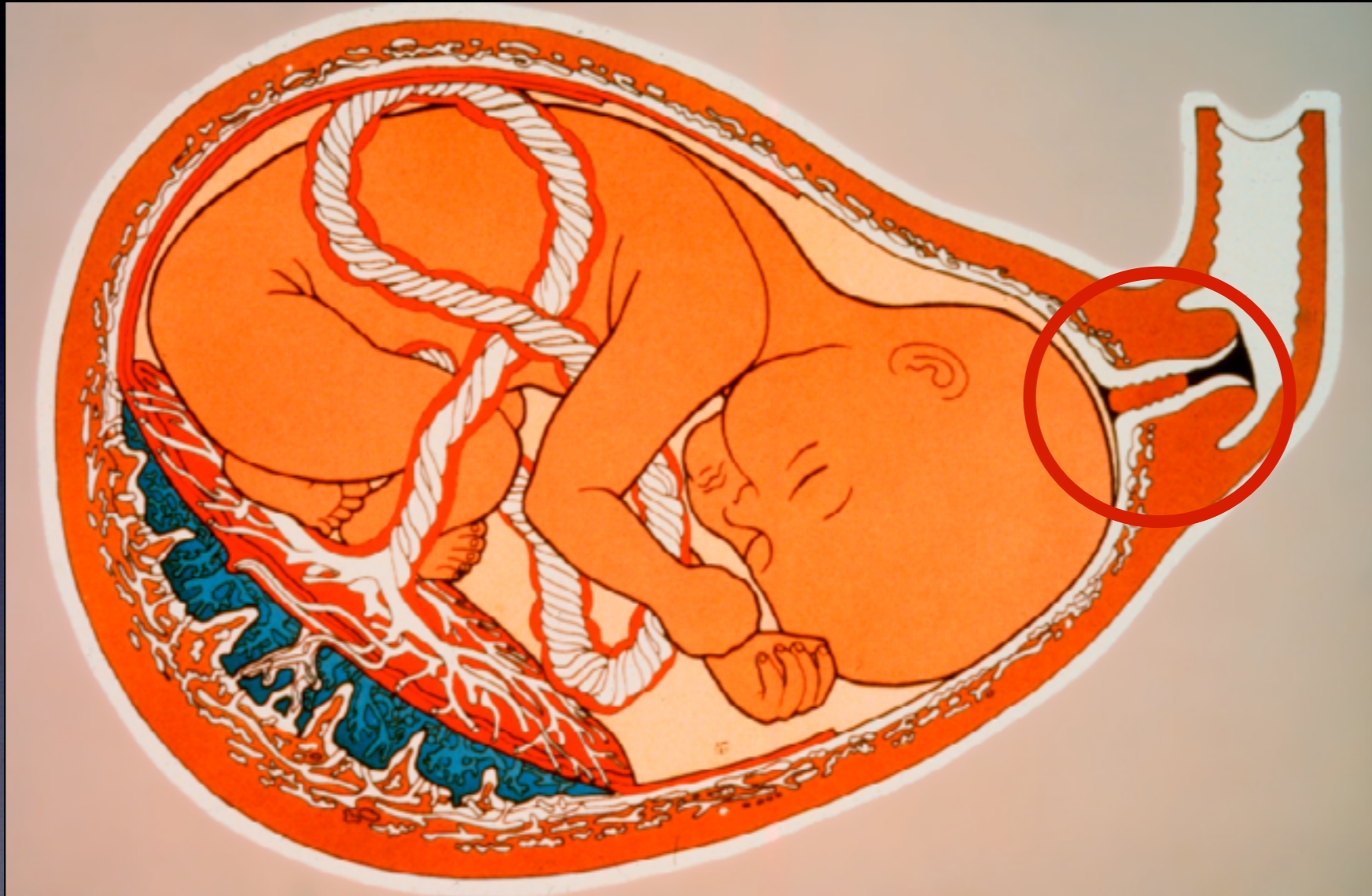
"High-Risk Patient", 20 wks, Cx 25 mm

- Delivery < 28 wks:
 - sensitivity ~ 95%, NPV ~ 99%
- Delivery < 34 wks:
 - sensitivity ~ 76%, NPV ~ 96%
- < 20 mm before 20 wks:
 - 95% deliver @ < 34 wks

Cervical Ripening



Cervical Ripening



Cervical Ripening



PTD is predated by ripening of the cervix, the membranes and the cervical mucus

Cervical Ripening



This leads to the release of various substances that can be measured.

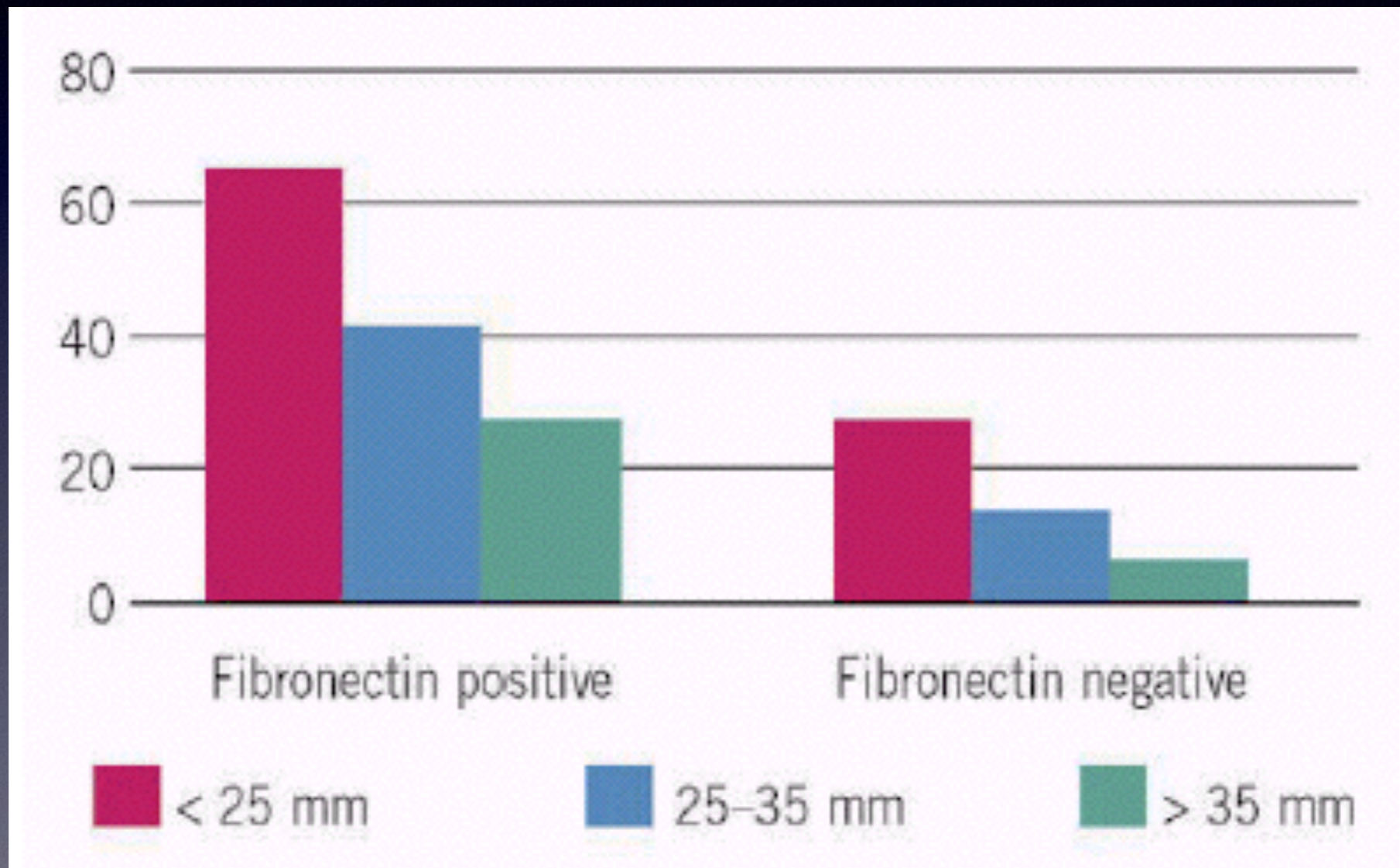
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Prediction of PTD:
Cervical Length & fetal Fibronektin

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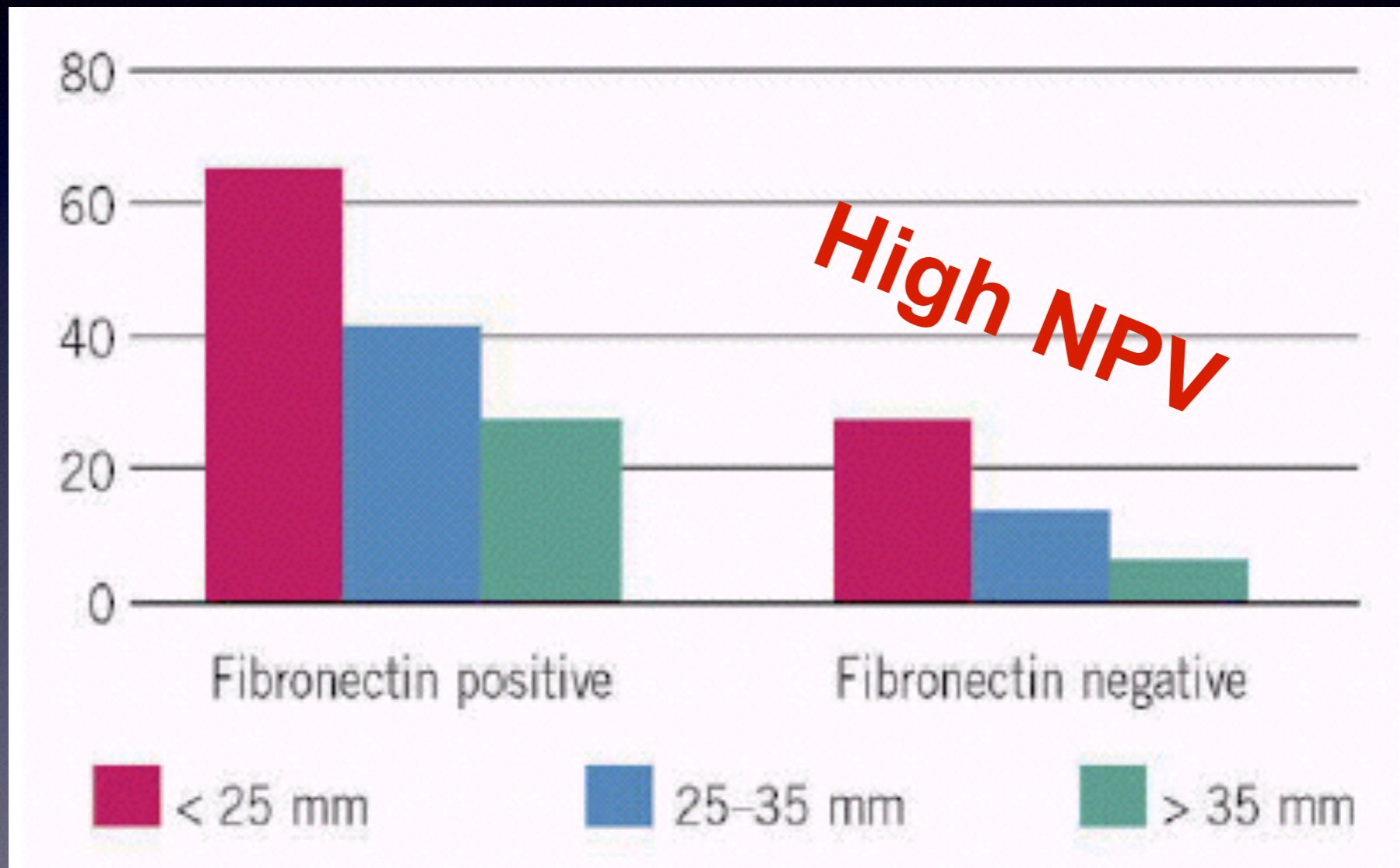
24 wks, Hx of PTD

Prediction of PTD: Cervical Length & fetal Fibronectin



24 wks, Hx of PTD

Prediction of PTD: Cervical Length & fetal Fibronectin



24 wks, Hx of PTD

Progesterone

Progesterone

Multiple effects:

- 'Tocolysis' by inhibition of effects of prostaglandins and estrogen antagonism
- Immunomodulation within the cervical tissue:
 - >inhibition of granulocyte influx
 - >inhibition of activation of collagenases
 - >inhibition of cervical ripening

Progesterone & Prevention of PTD

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- Hx of PTD
- Short cervix
- Multiples
- Hx of successful arresting of preterm labour

Progesterone & Prevention of PTD

- Hx of PTD

Heterogenous Results

In summary: some effects

? Mode of Application ?

? Dosage ?

of preterm labour

Progesterone - **vaginal** vs. **i.m.**

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- Hx of. PTD
- Short Cervix
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- 5 vs. 4 studies
- vaginal: \approx 60%
- i.m.: \approx 40%

Progesterone - **vaginal** vs. **i.m.**

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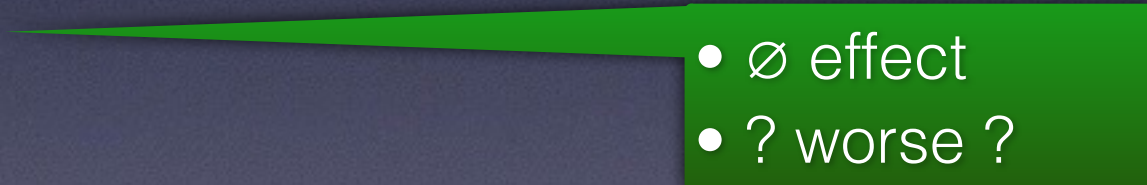
- Hx of. PTD
- Short Cervix
- Multiples
- Hx of successful arresting of preterm labour

- 2 vs. 1 studies
- vaginal: \approx 50%
- i.m.: \emptyset effect (?)

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Progesterone - **vaginal** vs. **i.m.**

- Hx of. PTD
- Short Cervix
- Multiples 
 - ∅ effect
 - ? worse ?
- Hx of successful arresting of preterm labour

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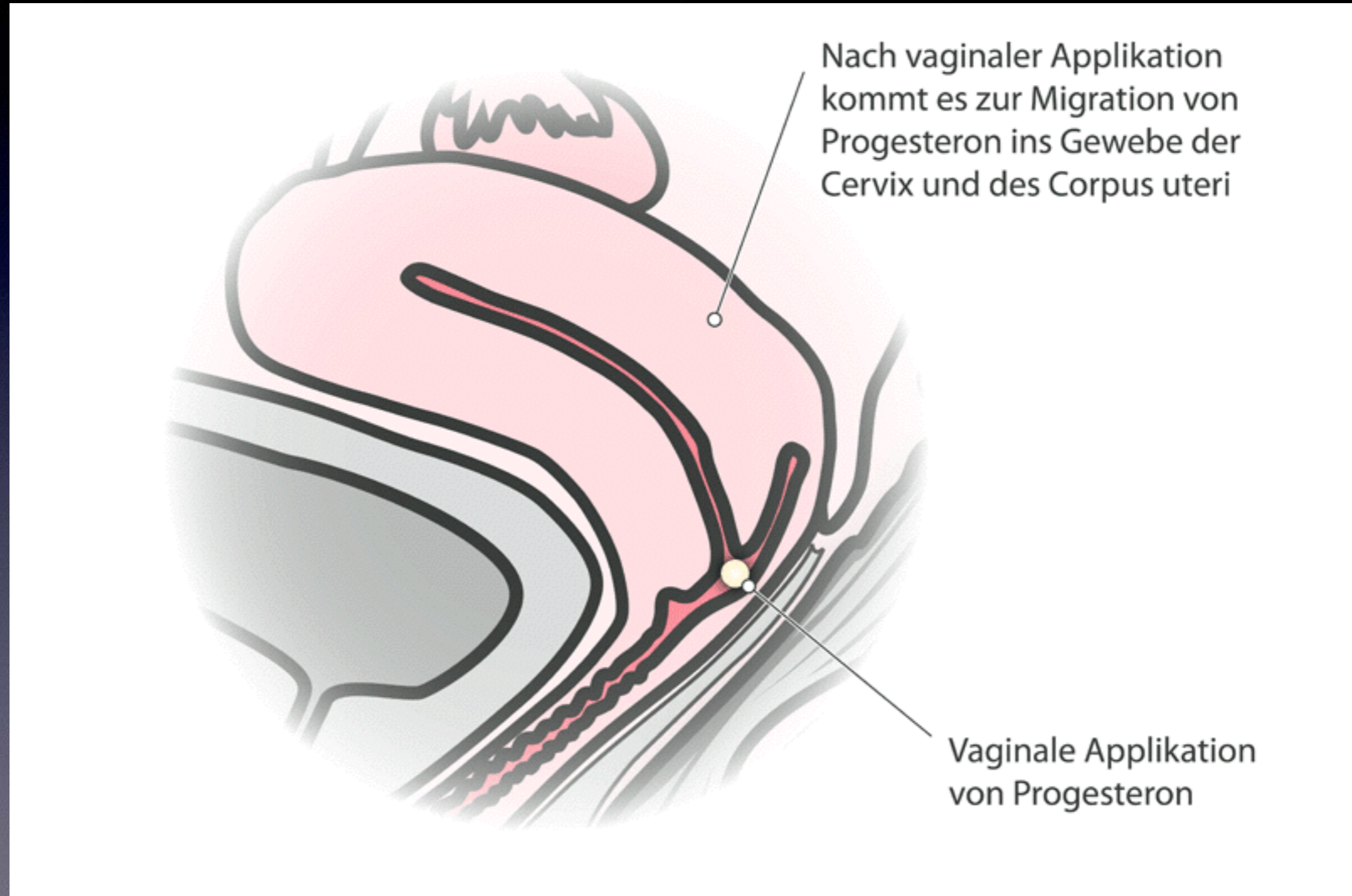
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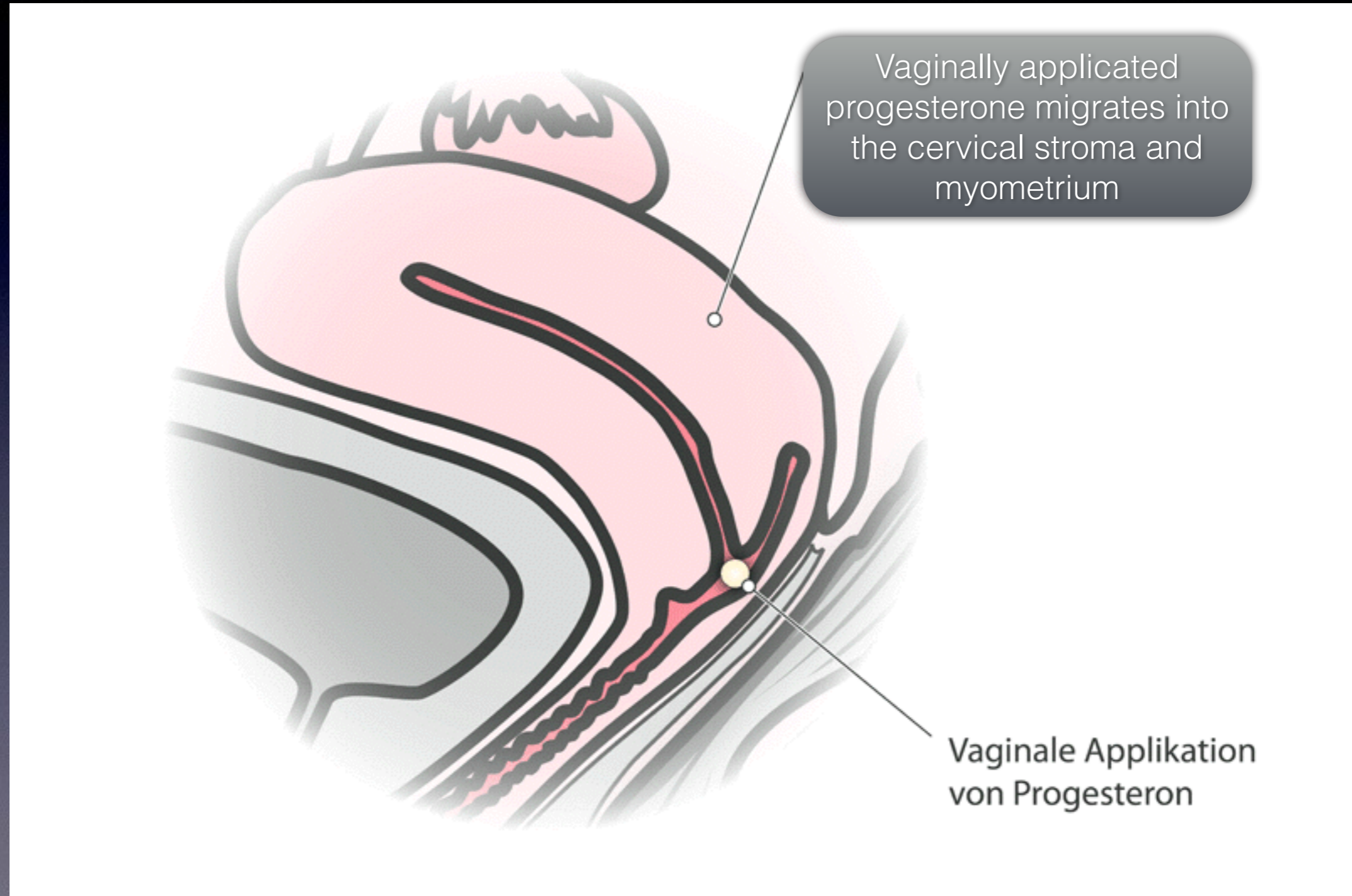
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Progesterone - **vaginal** vs. **i.m.**



Cerclage - Indications

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- Hx of late miscarriage/PTD
- Short cervix
(? +/- Hx of PTD ?)
- Cervical dilation ('rescue-cerclage')

Cerclage - Indications

- 3 studies
- 12-14 wks
- max. 30% effect

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Cerclage - Indications

- 5 studies
- Cx < 25mm
- 35% effect
- NNT: 20

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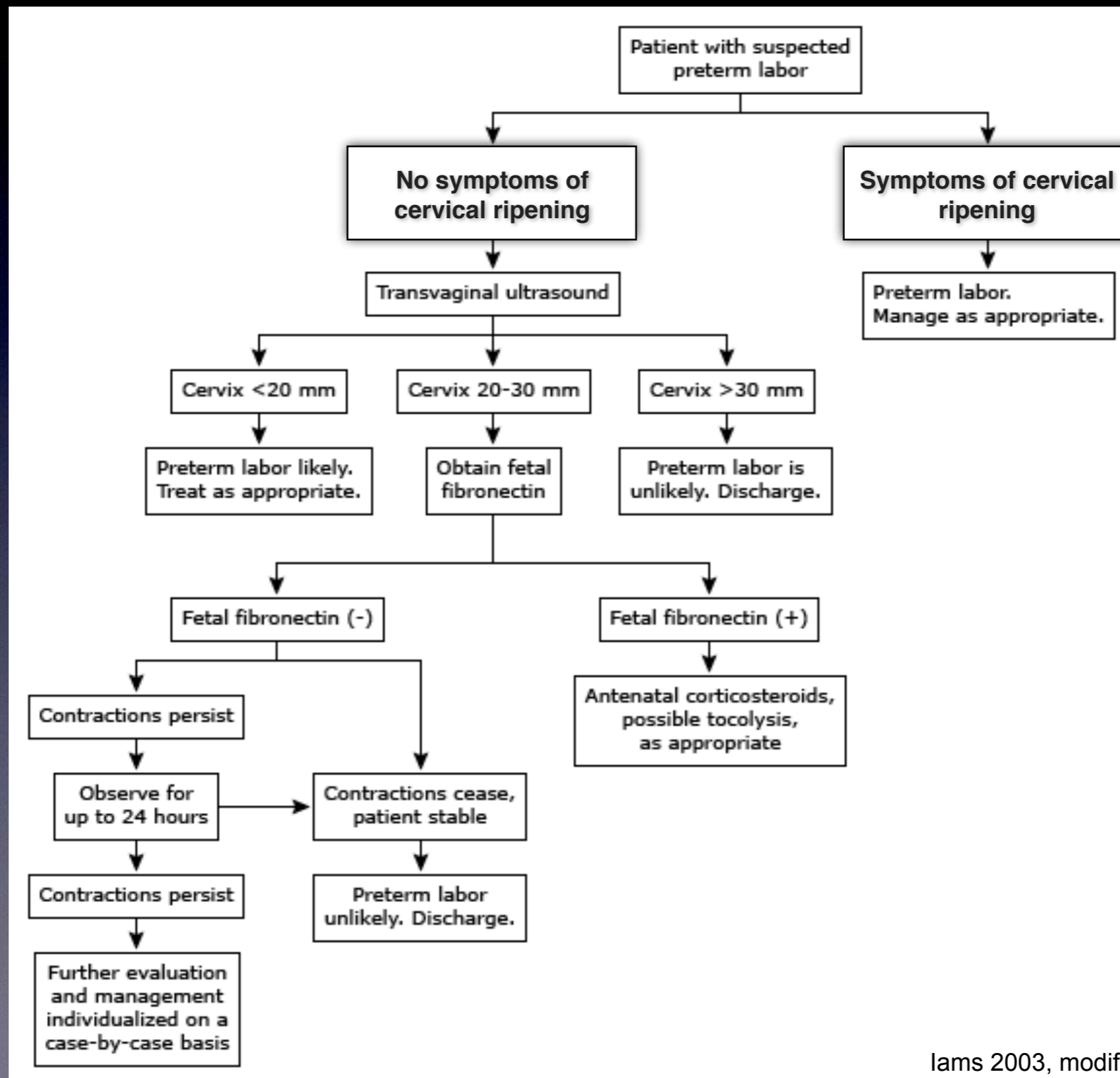
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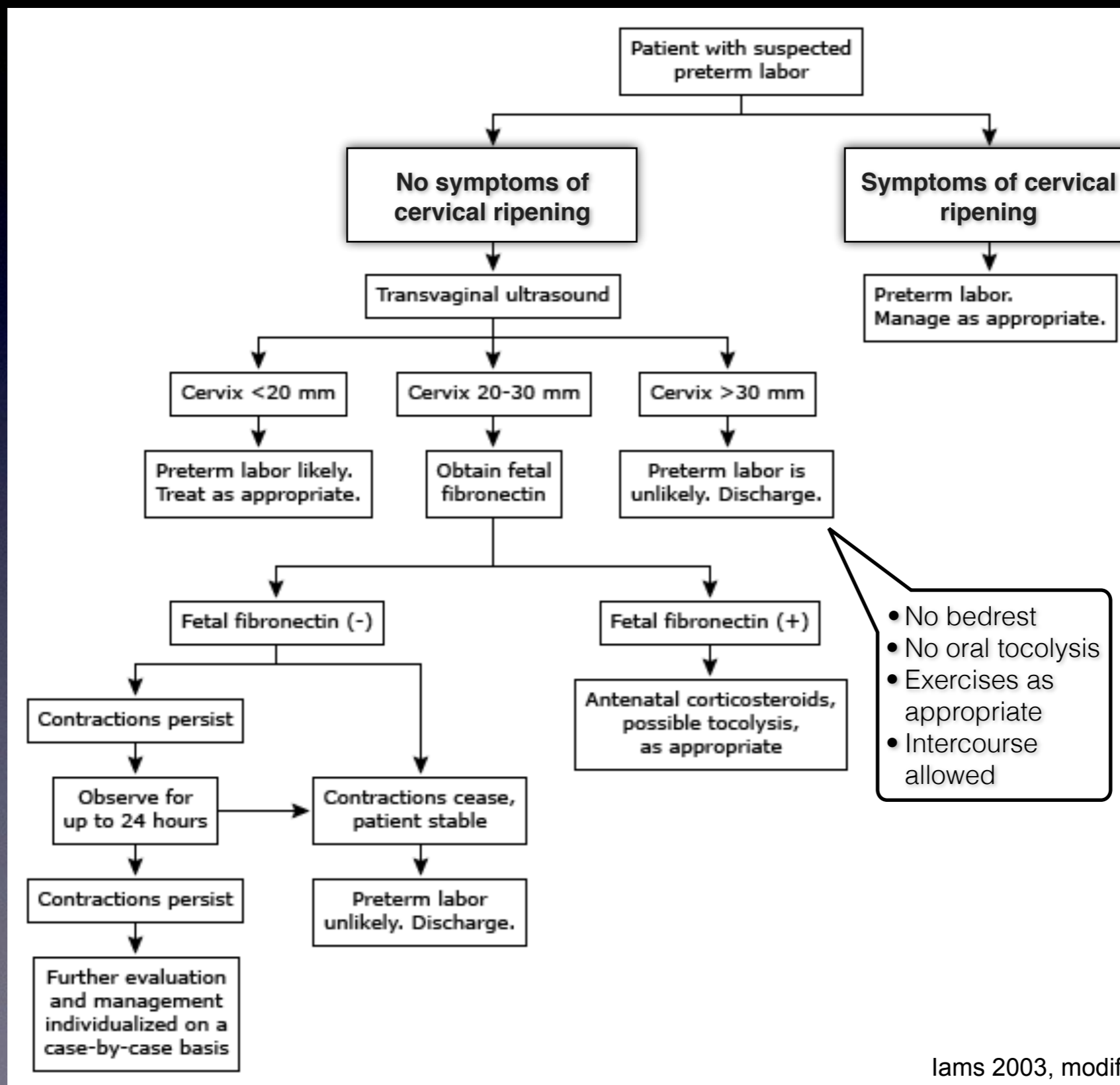
- > 18 case series
- pregnancy prolongation 4-10 wks
- 10x increase in neonatal survival

Acute Preterm Labour

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If **True** Preterm Labour

- Tocolysis
- RDS-prophylaxis
- Antibiotics
- Rescue cerclage
- Progesterone

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- Restrict to duration of RDS-prophylaxis
- Calcium-antagonists (Nifedipin)
—> probably neuroprotective

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- (22-)24 - 34 wks
- Betamethasone
- 2x12 mg, 24 hrs apart
- i.m. (not i.v.!)
- No routine-repetition
- unclear:
 - pPROM > 32 wks
 - Twins > 32 wks
 - placental insufficiency

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If **True** Preterm Labour

- Tocolysis
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- Progesterone

- Prophylaxis only w/ pPROM
- Unclear:
 - what?
 - how long?
 - combinations?
 - switch?
 - 'prophylaxis' vs. 'treatment'

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If **True** Preterm Labour

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- < 26 wks
- no active labour

If **True** Preterm Labour

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If **True** Preterm Labour

- Tocolysis
- RDS-prophylaxis
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- Rescue cerclage
- Progesterone

- after RDS-Prophylaxis
- 2 x200 mg per vaginam

If **True** Preterm Labour

- Tocolysis
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- Antibiotics
- Rescue cerclage
- Progesterone

If pPROM

- Confirm!
- Inpatient care
- Antibiotics
- Rule out infection!

If pPROM

- Symptoms?
- Pooling?
- Biochemical tests

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If pPROM

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- No bedrest
- NST bid
- Consider thromboprophylaxis
- IOL @ 34 - 37 wks

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If pPROM

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OUR way:

- Ampicillin/Sulbactam for 14 days, i.v.
- Acithromycin, 1 g, single dose
- Afterwards: individualized, on case-by-case basis

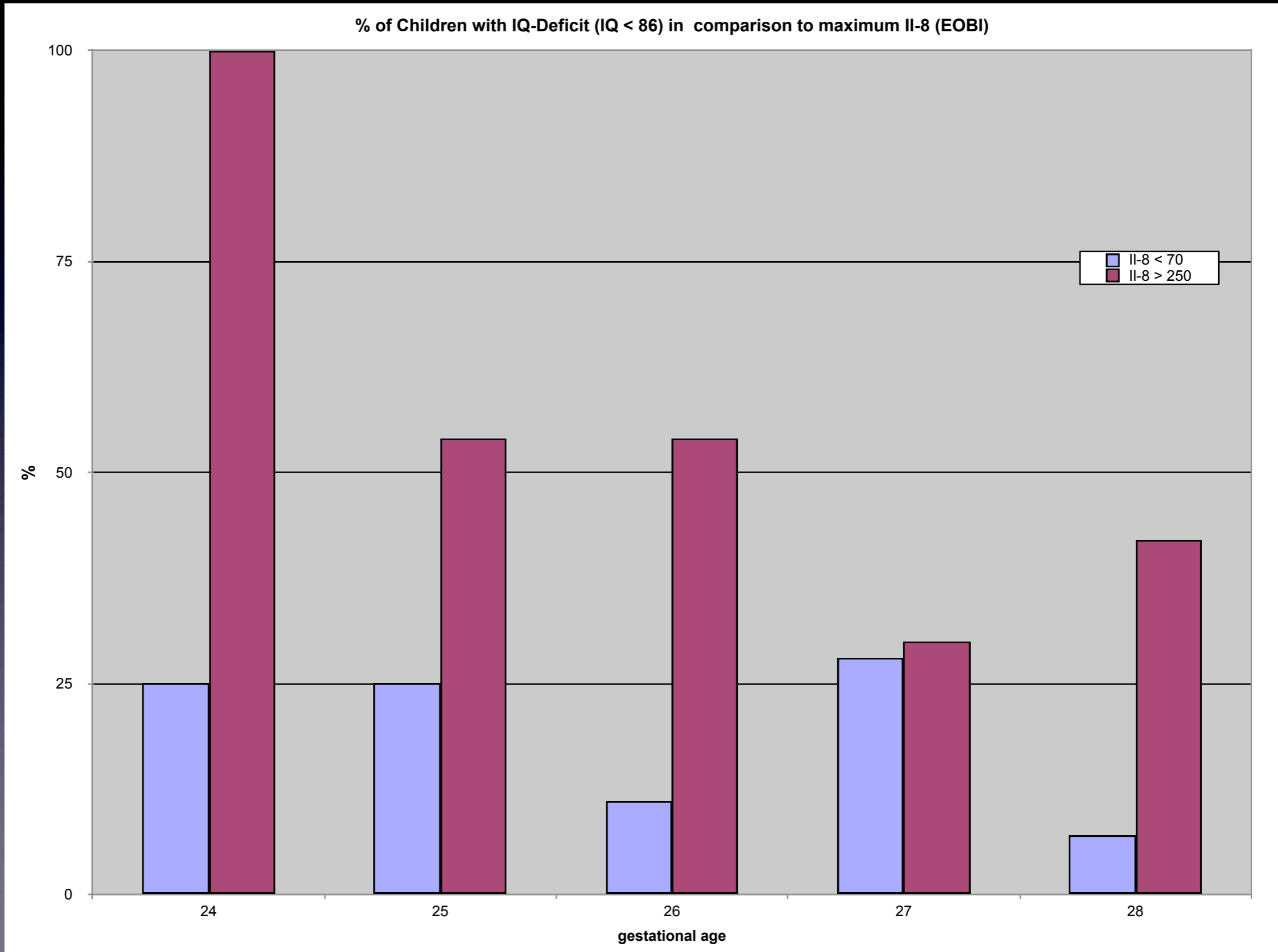
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- Confirm!
- Inpatient care
- Antibiotics
- Rule out infection!
 - Body temp q 4h —> tid
 - WBC/CRP/(IL-6) bid
 - Native swaps
 - Cultures twice weekly
 - If in doubt: consider Amnio

Fetal Inflammation & Intelligence



Mode of Delivery in PTB

- Vertex: aim for gentle vaginal birth
- Avoid protracted labour!
- Think twice about IOL....
- Breech before 34 wks: C/S probably better

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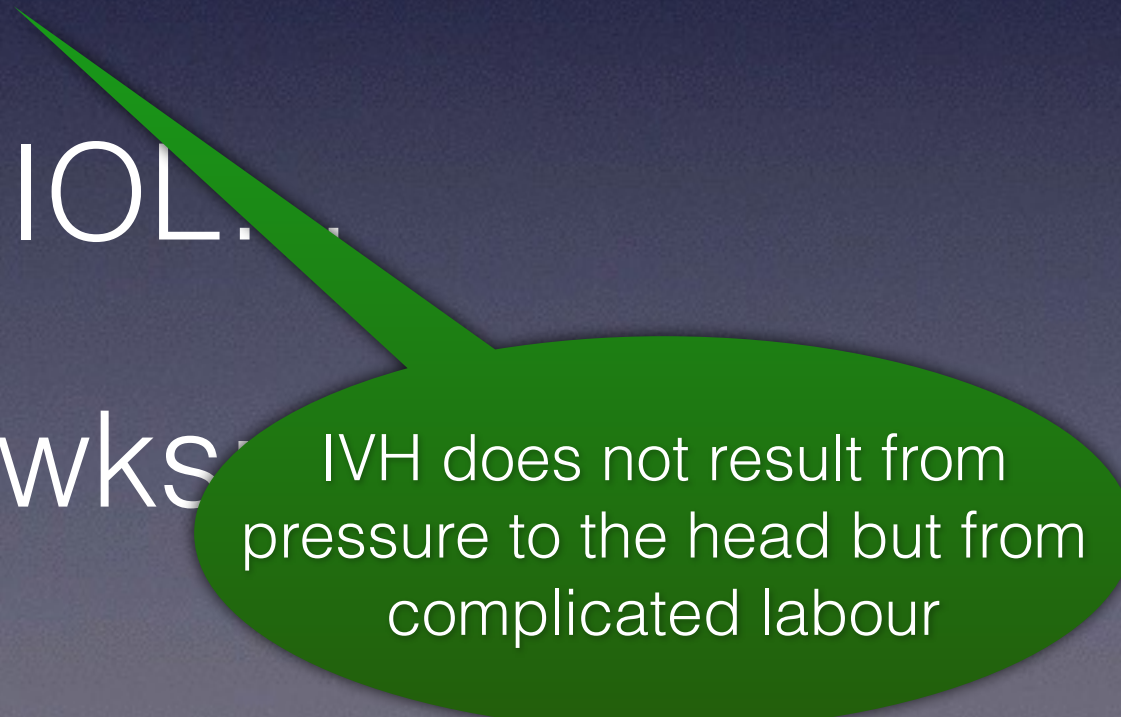

There is no evidence of a benefit of C/S by itself
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IVH does not result from pressure to the head but from complicated labour

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Mode of Delivery: PTB

IOL is typically considered due to imminent danger - so it might take too long or be too dangerous

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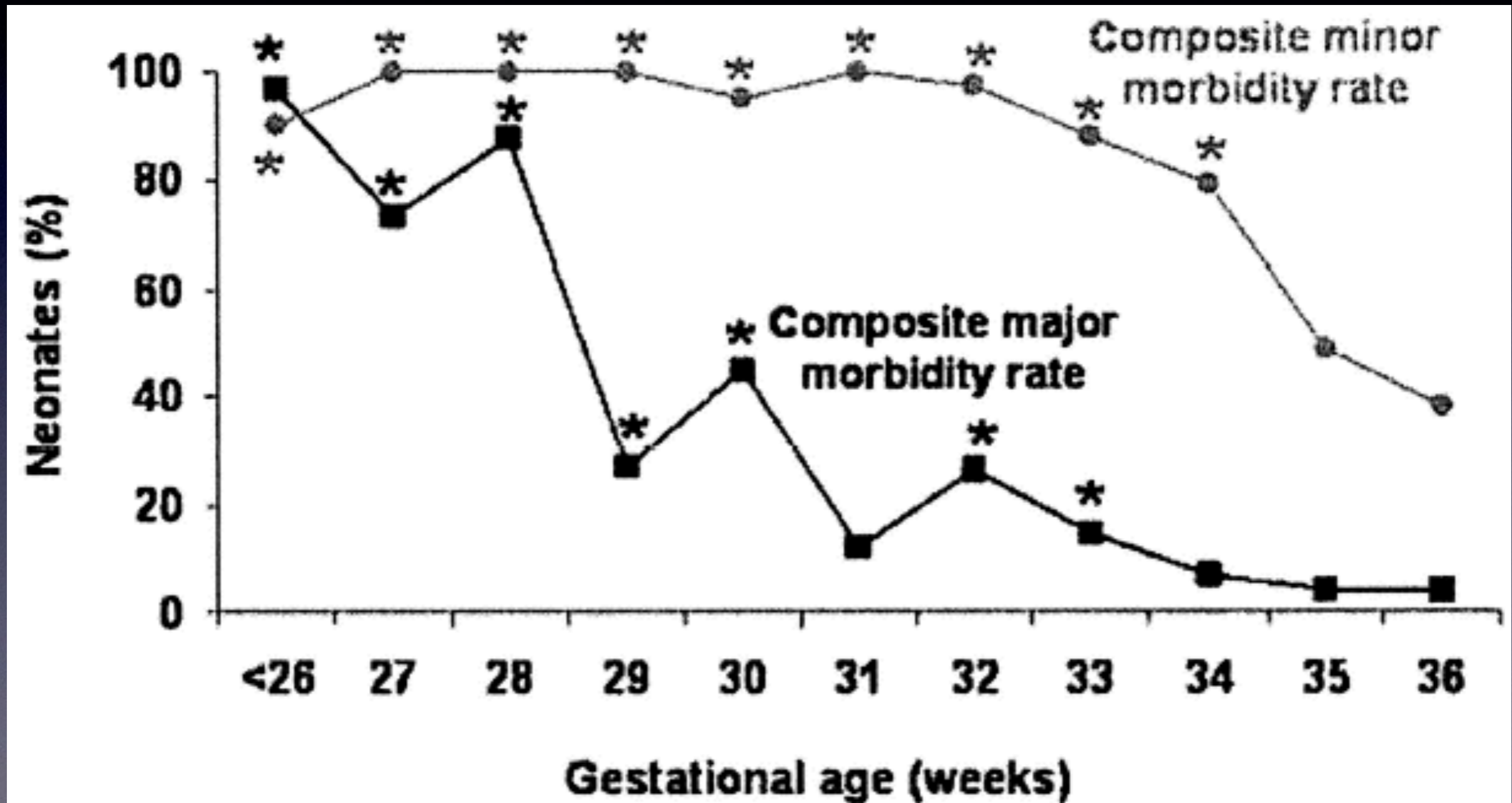
Mode of Delivery in PTB

Small
kids & breech:
risk of umbilical cord
prolaps

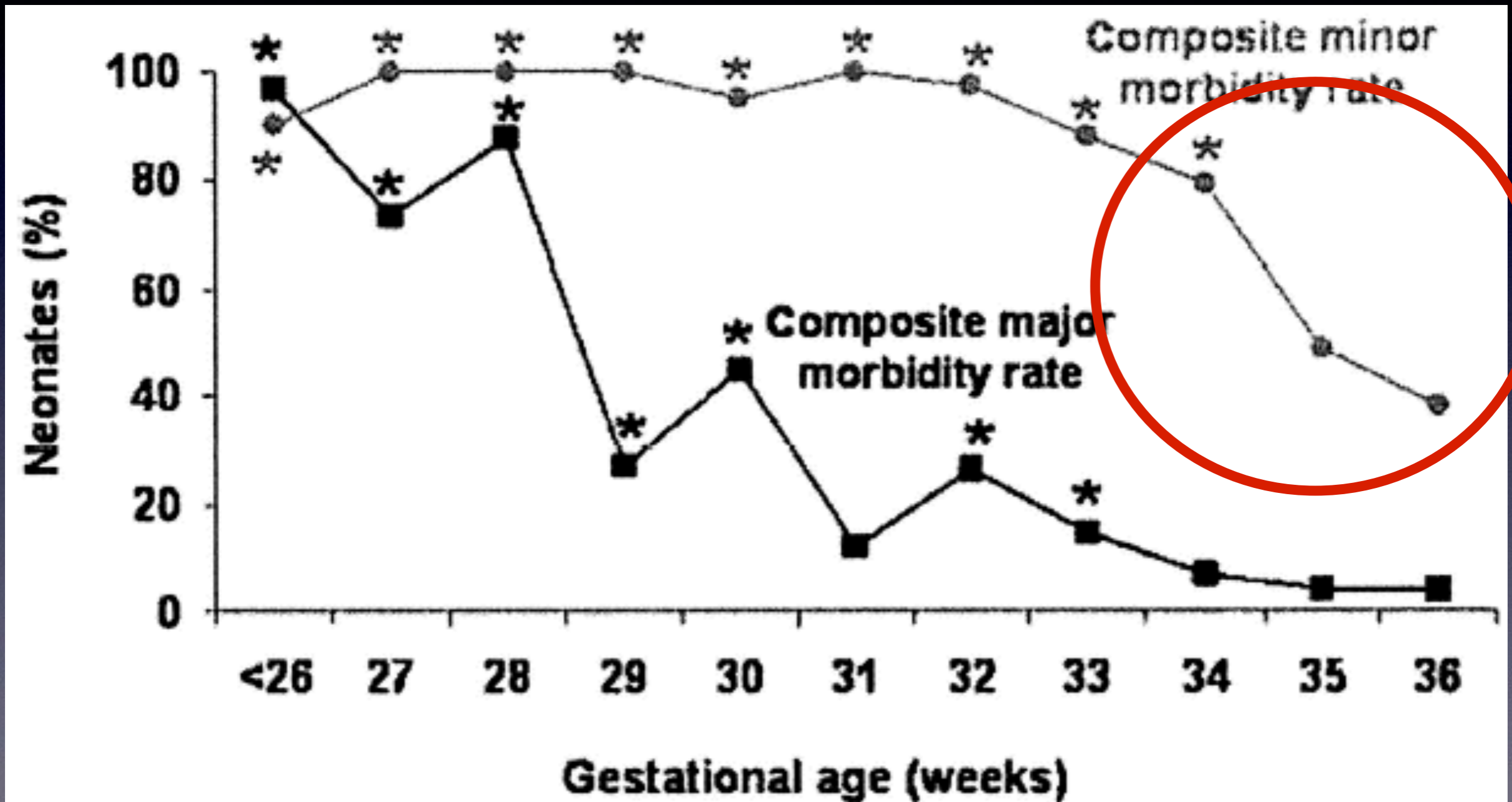
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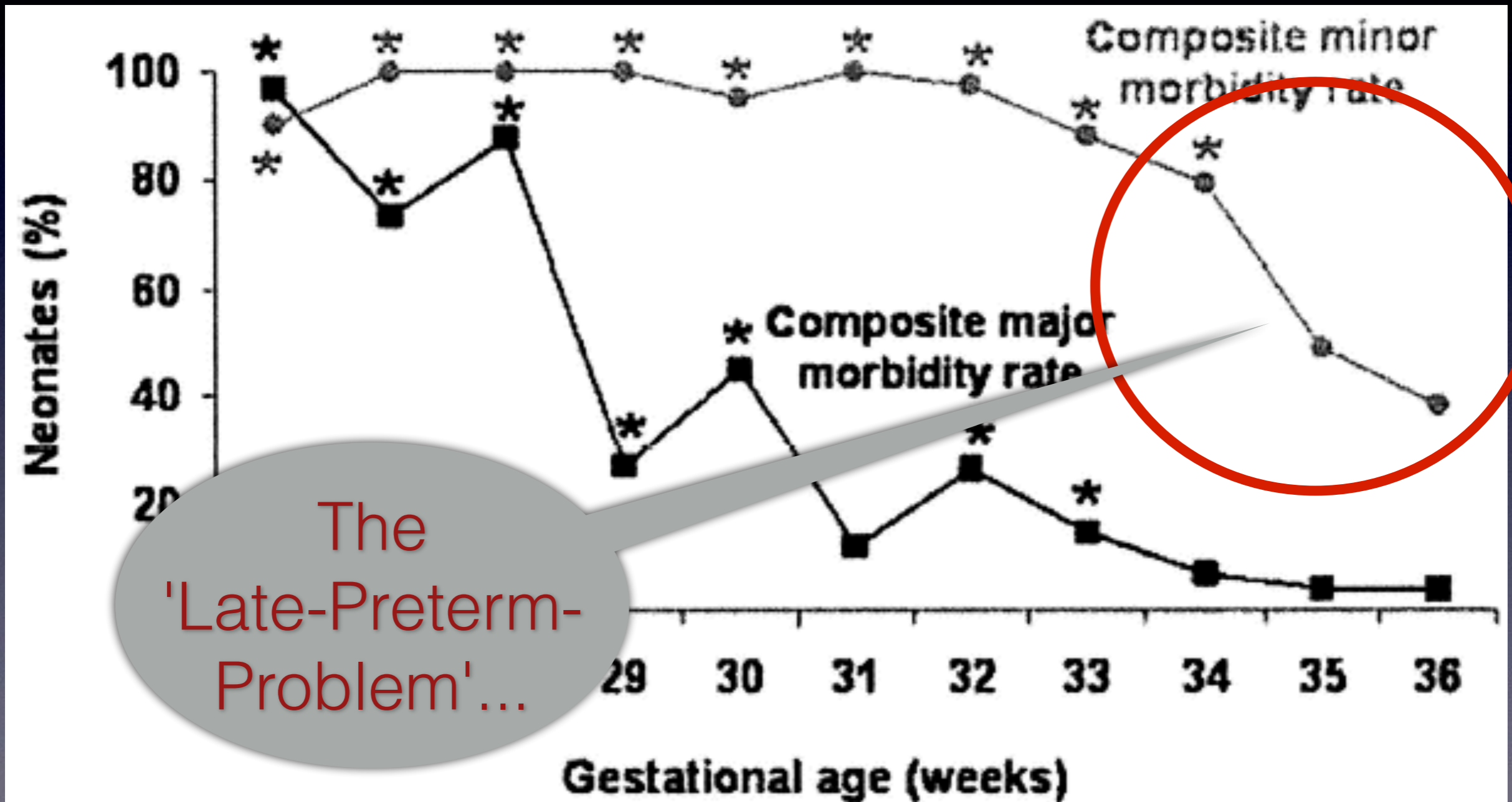
pPROM: When to Deliver?



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The 'Late-Preterm-Problem'...

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Late-Preterm Infants

- Failure to thrive
- Delayed/disturbed development of intestinal colonization
- Increased PVL/CP
- 'ALTE': 30% are Late-Preterms
- SIDS: x2
- Mortality: @ 34 wks RR 17,5
- Learning disabilities & ADHS



Thank
You

