



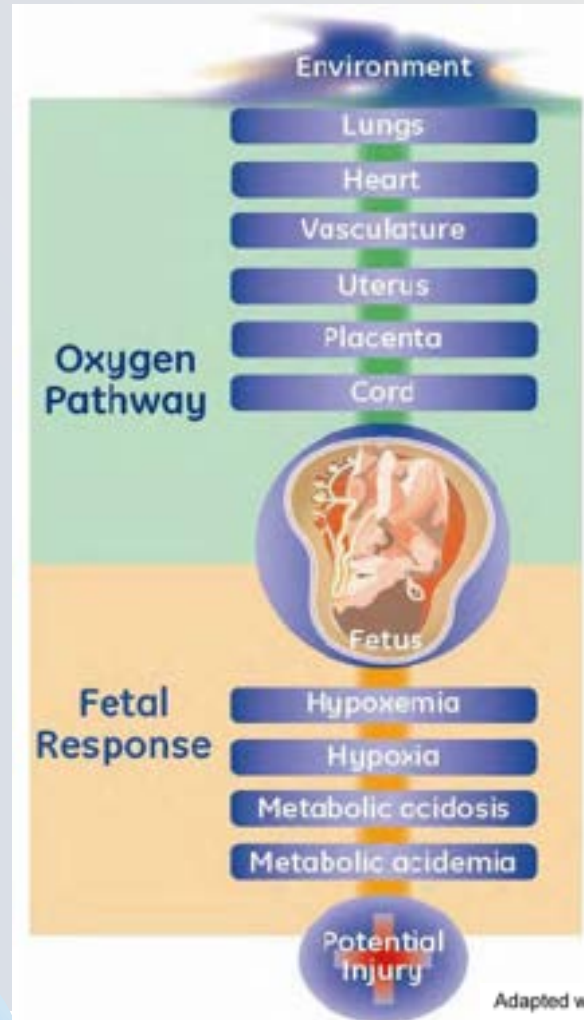
OXYGEN PATHWAY

**Transfer of Oxygen from
the Environment to the Fetus**

What is the Oxygen Pathway??



Question:
Where is there an interruption within the Oxygen Pathway ??????



Solution:
If able remedy
the situation!

What are the two components of the oxygen pathway?



#1 - The environment in which oxygen is delivered to the fetus

#2 - The fetal physiological response to an interruption within the oxygen pathway

Patient History

G₂P₁

Obesity

PPROM
(32 weeks)

FGR

Oligohydramnios

How does obesity affect pregnancy?

- **Common in reproductive-age women**
- **↑ Maternal and neonatal morbidity/mortality**
- **↑ Maternal cardiac dysfunction**
- **↑ Stillbirth**
- **↑ Diabetes (preexisting & gestational)**
- **↑ Hypertensive disorders (chronic, preeclampsia)**
- **↑ Sleep apnea**

gestation

What are some challenges associated with laboring the obese patient?

- **Difficulty monitoring contractions and fetal heart rate**
- **Higher Pitocin requirements for induction**

Increased Risk of:

- **↑ Medically indicated preterm birth**
- **↑ Labor dystocia / prolonged labor**
- **↑ Cesarean delivery**
- **↑ Wound rupture / dehiscence**
- **↑ Infection (UTI, episiotomy, endometritis, wound)**

What are concerns of 32 wk PPRM??

- **↑ Risk of infection**
- **Higher FHR baseline in preterm fetus (≤ 160 bpm)**
- **Risk of cord prolapse with poorly applied head**
- **28–33 wks: ~70% have variable decelerations**
- **Preterm fetus more susceptible to hypoxia/acidemia**
- **O₂ disruption progresses faster to metabolic acidemia / injury**

What are concerns with FGR and Oligohydramnios??



- **Fetal growth restriction (FGR): fetus does not reach its in-utero growth potential**
- **Usually related to compromised placental function**
- **Affects ~5–10% of pregnancies**
- **Defined as fetal weight < 10th percentile**
- **Oligohydramnios may indicate ongoing fetal hypoxia**
- **Hypoxic fetuses redistribute (shunt) blood flow to brain, heart, and adrenals**
- **Amnioinfusion may be needed for recurrent variable FHR decelerations**



Environment

Lungs

Heart

Vasculature

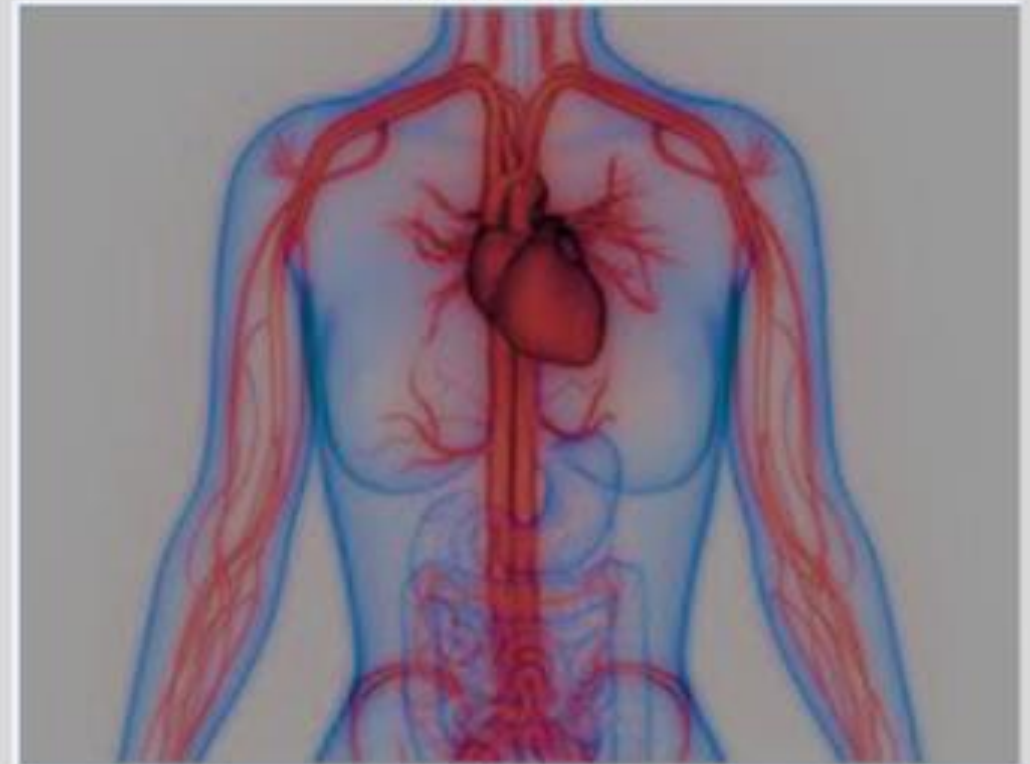
Uterus

Placenta

Cord

Oxygen
Pathway

The Host

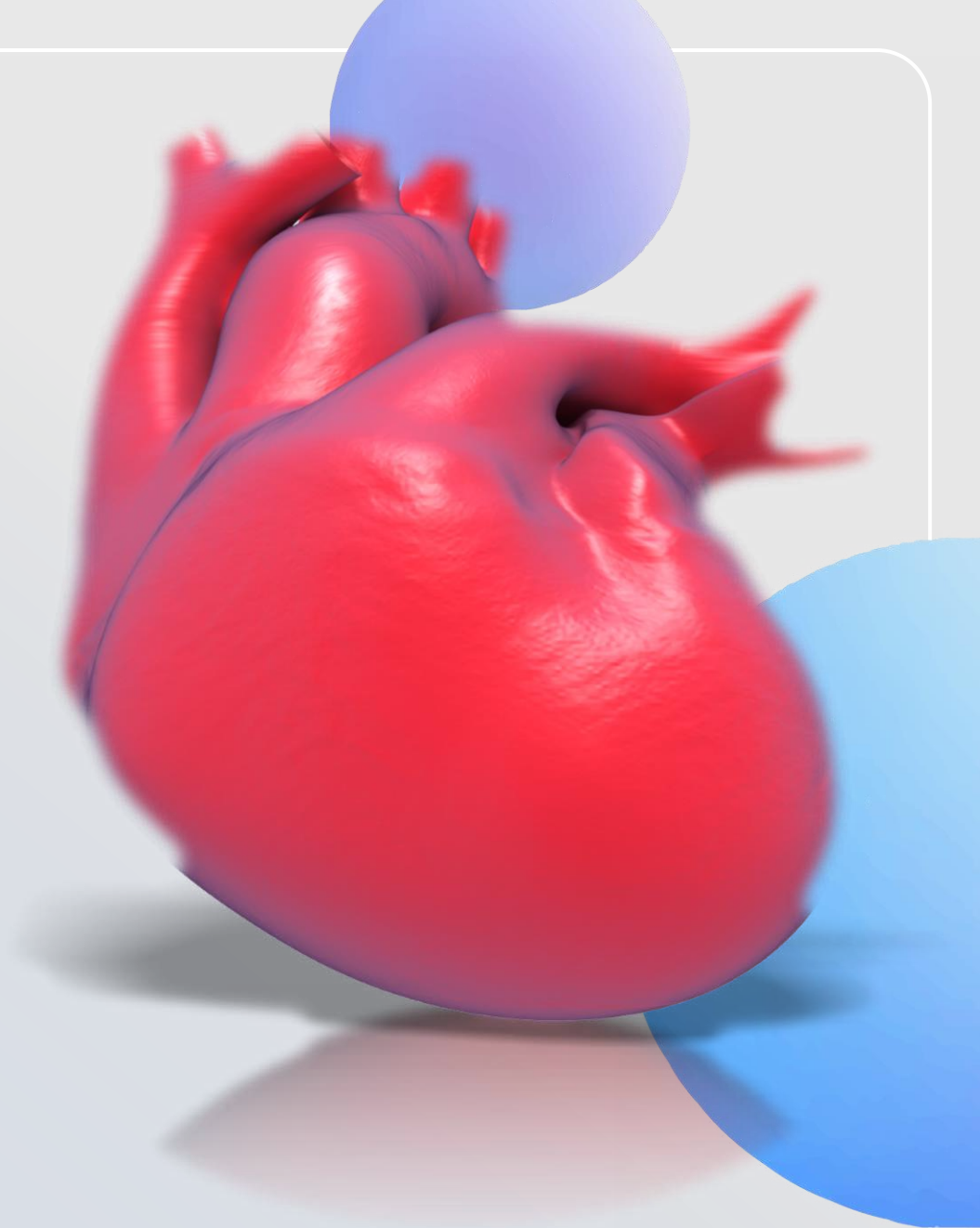


Why is maternal oxygenation so important to the fetus?

Maternal oxygen is the only source for the fetus.



**What
conditions
would affect
the maternal
cardiac
system??**



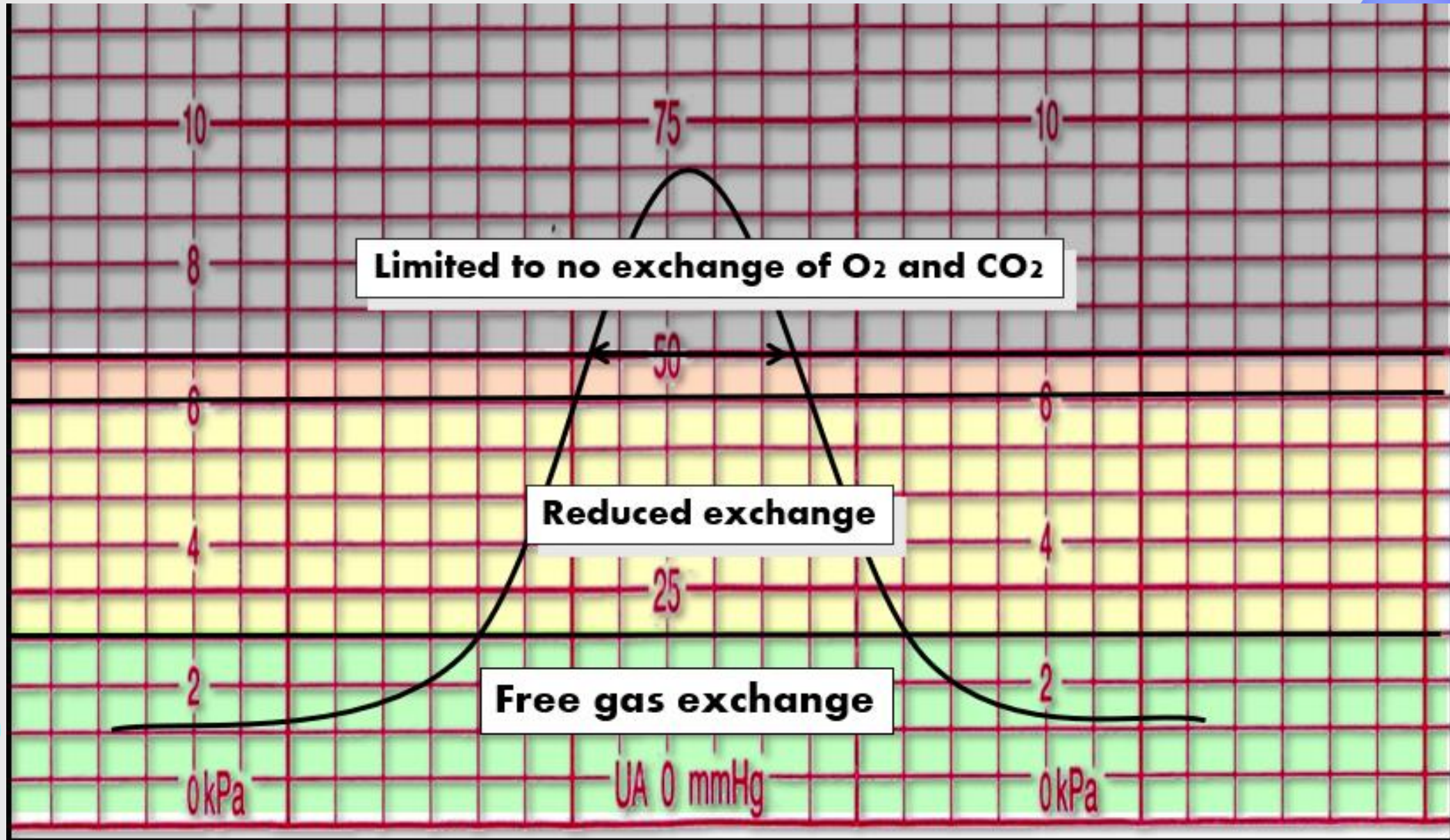


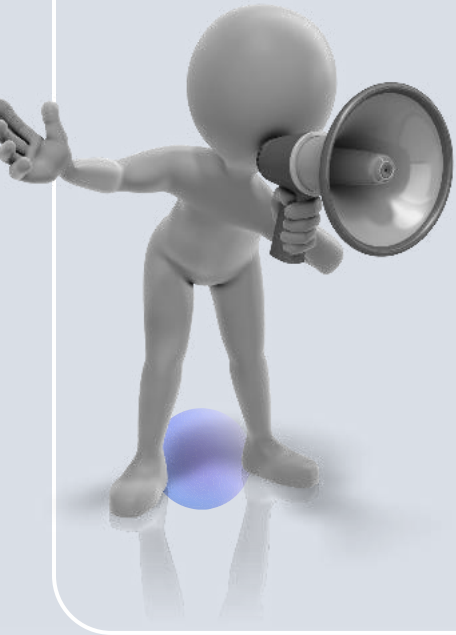
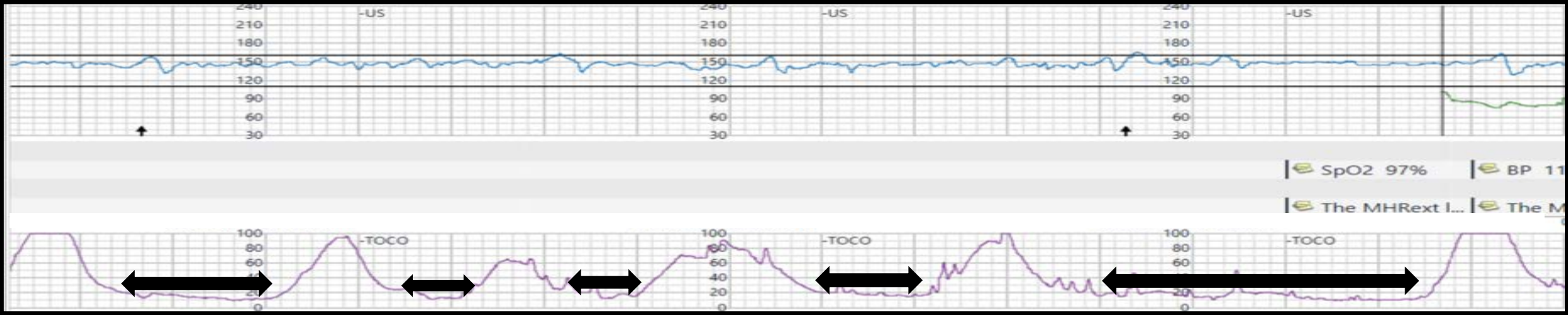
**What
conditions
would affect
the maternal
vasculature?**





**What could
cause an
interruption of
oxygen
transfer at the
level of the
uterus??**





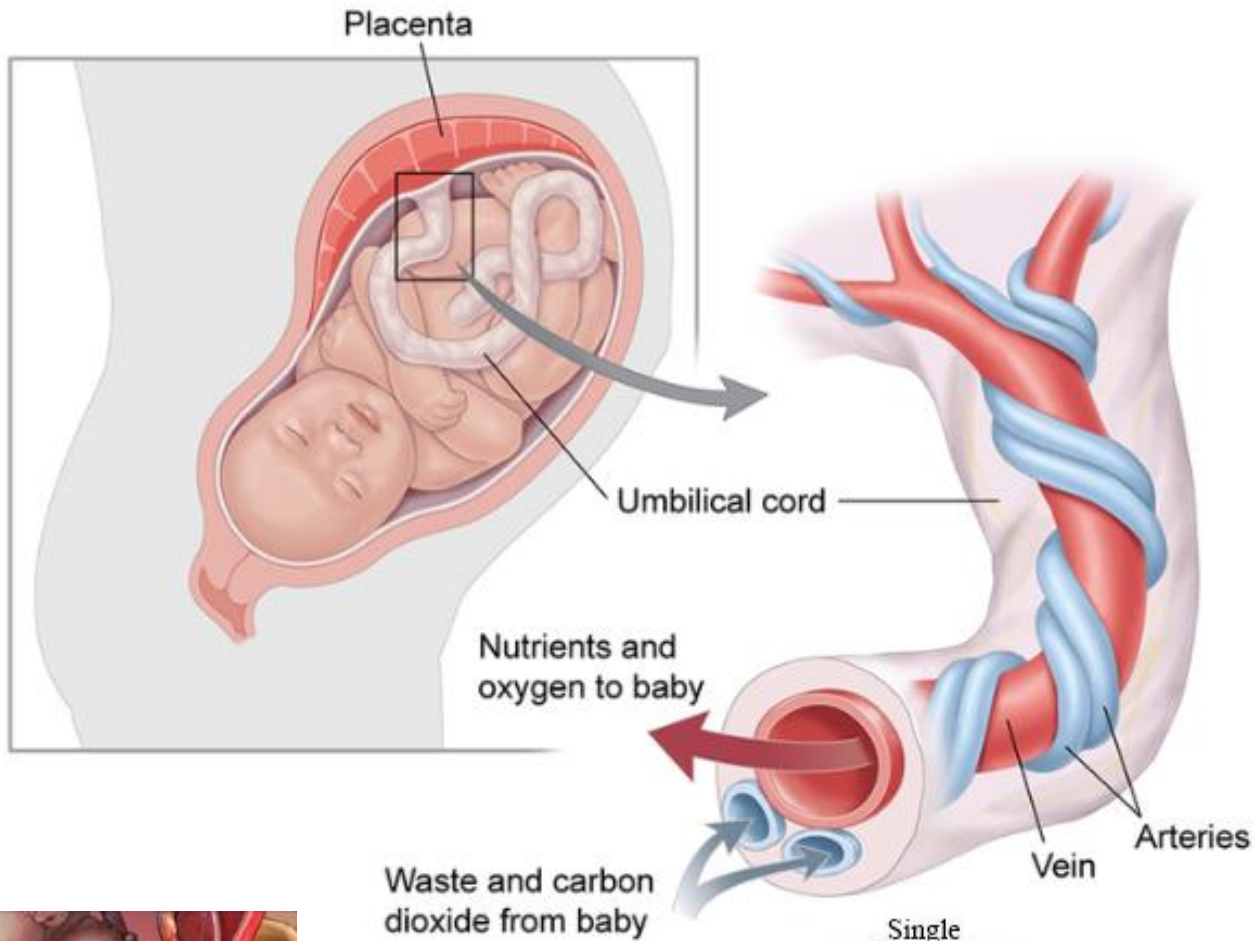
**What should relaxation time
 be in 1st stage of labor??
 What should it be in 2nd stage
 of labor??**

**1st stage of
 labor:
 ≥ 60 seconds**

**2nd stage of
 labor:
 ≥ 45 seconds**



**What could
cause an
interruption of
oxygen
transfer at the
level of the
placenta??**

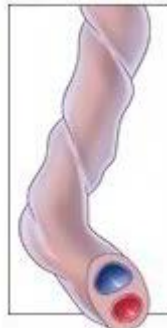


What could cause an interruption of oxygen transfer at the level of the umbilical cord??



 babycenter.

Single umbilical artery



Questions?

