PRETERM BIRTH

Premature Labor

Birth of the baby before 37 completed weeks of gestational age.

⚠ Risk factor ♂ Male & Female

About Preterm birth

Preterm birth is birth of the baby before 37 completed weeks of gestational age. These babies are known as preemies or premies (Pic. 1). The preterm infant causes significant health consequences to the infant and economic costs for families and communities.

Preterm birth is a syndrome with a variety of causes which can be classified into two broad subtypes:

1. spontaneous preterm birth - spontaneous onset of labour or following prelabour premature rupture of membranes
2. provider-initiated preterm birth - defined as induction of labor or elective caesarean birth before 37 completed weeks of gestation for maternal or fetal indications (both “urgent” or “discretionary”), or other non-medical reasons

About 75% of perinatal deaths and 50% of neurological abnormalities are directly related to preterm. The main resulting morbidities are neurosensory deficits (blindness, deafness), intraventricular hemorrhage (bleeding into the brain’s ventricular system), necrotizing enterocolitis (portions of the bowel undergo tissue death), and delay in physical and mental development.

In the normal human fetus, several organ systems mature between 34 and 37 weeks, and the fetus reaches adequate maturity by the end of this period. One of the main organs greatly affected by premature birth is the lungs. The lungs are one of the last organs to mature in the womb; because of this, many premature babies spend the first days/weeks of their life on a ventilator. Preterm babies born near 37 weeks often have no problems relating to prematurity if their lungs have developed adequate surfactant, which allows the lungs to remain expanded between breaths. Sequelae of prematurity can be reduced to a small extent by using drugs to accelerate maturation of the fetus, and to a greater extent by preventing preterm birth.

A helpful clinical test should predict a high risk for preterm birth during the early and middle part of the third trimester, when their impact is significant. Many women experience false labor (not leading to cervical shortening and effacement) and are falsely labeled to be in preterm labor. The study of preterm birth has been hampered by the difficulty in distinguishing between “true” preterm labor and false labor. The clinical tests are used to identify women at risk for preterm birth.

Tertiary interventions (intended to improve outcomes for preterm infants) are aimed at women who are about to go into preterm labor, or rupture the membranes or bleed preterm. The use of the accurate diagnosis reduces false-positive diagnosis. While treatments to arrest early labor where there is progressive cervical dilatation and effacement will not be effective to gain sufficient time to allow the fetus to grow and mature further, it may defer delivery sufficiently to allow the mother to be brought to a specialized center that is equipped and staffed to handle preterm deliveries. In a hospital setting women are hydrated via intravenous infusion (as dehydration can lead to premature uterine contractions).

About 75% of nearly a million deaths due to preterm deliver would survive if provided warmth, breastfeeding, treatments for infection, and breathing support (Pic. 2). If a baby has cardiac arrest at birth and is before 23 weeks or less than 400 gms attempts at resuscitation are not indicated.
Symptoms

Symptoms of preterm labor include uterine contractions which occur more often than every ten minutes or the leaking of fluid from the vagina that begins before the 37th week of pregnancy.

Associated diseases

- adenomyosis (abnormal presence of endometrial tissue within the uterine muscle layer)
- uterus malformations (result of an abnormal development of the uterus during the woman’s prenatal development)
- uterus duplex (woman has two uteri)

Complications

Some of the complications related to prematurity may not be apparent until years after the birth. A long-term study demonstrated that the risks of medical and social disabilities extend into adulthood and are higher with decreasing gestational age at birth and include cerebral palsy (permanent movement disorders that appear in early childhood), intellectual disability, disorders of psychological development, behavior, and emotion, disabilities of vision and hearing, and epilepsy.

Standard intelligence tests showed that 41 percent of children born between 22 and 25 weeks had moderate or severe learning disabilities when compared to the test scores of a group of similar classmates who were born at full-term. It is also shown that higher levels of education were less likely to be obtained with decreasing gestational age at birth. In some cases, people born prematurely may be more susceptible to developing depression as teenagers. Some of these problems can be described as being within the executive domain and have been speculated to arise due to decreased myelination of the frontal lobes. Studies of people born premature and investigated later with magnetic resonance imaging (MRI) brain imaging, demonstrate qualitative anomalies of brain structure and grey matter deficits within temporal lobe structures and the cerebellum that persist into adolescence. Throughout life they are more likely to require services provided by physical therapists, occupational therapists, or speech therapists.

Beyond the neurodevelopmental consequences of prematurity, infants born preterm have a greater risk for many other health problems. For instance, children born prematurely have an increased risk for developing chronic kidney disease.

Risk factors

- adolescent pregnancy
- advanced maternal age
- short inter-pregnancy interval
- multiple pregnancy
- infection
- undernutrition
- smoking
- excess alcohol consumption
- depression
- in vitro fertilization (IVF)
- high blood pressure (hypertension)
- pre-eclampsia (pregnancy complication that causes high blood pressure, kidney damage, and other problem)
- maternal diabetes
- asthma (long-term inflammatory disease of the airways of the lung)
- thyroid disease
- heart disease
- short cervix
- vaginal bleeding during pregnancy

Prevention

Self-care methods to reduce the risk of preterm birth include proper nutrition, avoiding stress, seeking appropriate medical care, avoiding infections, and the control of preterm birth risk factors (e.g. working long hours while standing on feet, domestic abuse, and other factors). Self-monitoring vaginal pH followed by yogurt treatment or clindamycin treatment if the pH was too high all seem to be effective at reducing the risk of preterm birth. Additional support during pregnancy does not appear to prevent low birthweight or preterm birth.
Pregnant women with a short cervical length, measured either with abdominal or transvaginal ultrasound, are at increased risk of having a preterm birth. Vaginal progesterone administration during pregnancy can potentially decrease the number of preterm births and lower neonatal mortality and morbidity.

How it can affect fertility

Women who have had a previous premature birth are at higher risk of premature labor, especially those with multiples. It is recommended that they be offered some form of progesterone to prevent another preterm birth. Also, previous preterm birth may cause cervical weakness, that could further be the reason for another preterm birth.

What is known is that the uterine cervix is a dynamic anatomical structure that serves during most of gestation as a barrier between the fetus and its intra-uterine environment and the vagina as the portal to the outside world. During that time it is a firm structure that predominantly consists of collagen, but in the prelude to parturition the collagen is degraded and the cervix becomes soft and pliable enough to dilate. Imperfections in the process and/or timing of cervical ripening do occur, given the occurrence of preterm labor and dystocia in labor.

Infection and inflammation are causally related to preterm labor and cervical ripening. This relates to the cervical properties, as the chance of preterm delivery is inversely related to the length of the cervical canal, which contains mucus with antibacterial properties. If the mechanical and/or antibacterial properties of the cervix are anatomically or functionally impaired, for example by intra-uterine exposure to diethylstilbestrol, or by surgery or trauma to the cervix, the remaining strength of the cervix may be insufficient to retain the pregnancy.

Prognosis

A preterm birth can put enormous strain on the family, particularly if the baby is seriously ill. The neonatal unit is an unfamiliar environment in which parents can feel lost and frustrated. The effects of a preterm birth on parental stress are exacerbated by caesarean section and by either no or limited contact with their baby soon after birth. In studies largely based on single sites/hospitals the risk of anxiety, depression, posttraumatic stress disorder (PTSD) and poorer overall wellbeing have been documented as significantly increased in parents of preterm babies, with these ill effects reported to persist for a considerable time especially following very preterm birth.

The chance of survival at less than 23 weeks is close to zero, while at 23 weeks it is 15%, 24 weeks 55% and 25 weeks about 80%. The chances of survival without long term difficulties is less. In the developed world overall survival is about 90% while in low income countries survival rates are about 10%.

Advances in prenatal and neonatal care, i.e. the care of ill or premature newborn infants, have improved the survival for preterm infants but those infants who do survive have a greater risk of developmental disabilities, health, and growth problems than infants born at full term (Pic. 3).

Some children will adjust well during childhood and adolescence, although disability is more likely nearer the limits of viability. As survival has improved, the focus of interventions directed at the newborn has shifted to reduce long-term disabilities, particularly those related to brain injury.

Prior preterm birth experience is associated with increased likelihood of another one.

Find more about related issues

Diagnoses
**Adenomyosis**
Medical condition characterized by the presence of ectopic endometrial tissue within the myometrium.
Learn more at: www.fertilitypedia.org/therapy/diag/adenomyosis

**Antiphospholipid syndrome**
A condition when immune system mistakenly attacks some of the standard proteins in blood.
Learn more at: www.fertilitypedia.org/therapy/diag/antiphospholipid-syndrome-do-rf

**Hydrocele testis**
An accumulation of clear fluid in the tunica vaginalis, the most internal of membranes containing a testicle.
Learn more at: www.fertilitypedia.org/therapy/diag/hydrocele-testis

**Undescended testes**
In the case of cryptorchidism one or both testes are absent from the scrotum. It is the most common etiologic factor of azoospermy in the adult.
Learn more at: www.fertilitypedia.org/therapy/diag/undescended-testes

**Gallery**

![Image 1](image1.png)
![Image 2](image2.png)
Sources

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