



Preterm labour

Identify high-risk individuals early on

BY MARK WALKER, MD AND YASER FADEN, MD

Preterm delivery continues to be the number one cause of neonatal morbidity and mortality worldwide. Whether spontaneous or medically indicated, it accounts for 60-80% of neonatal death not associated with congenital anomalies.¹ The World Health Organization (WHO) defines preterm birth as delivery of an infant between 20-37 weeks' gestation.² The sequelae can be severe and may include cerebral palsy, chronic lung disease, visual impairment and long-term neurodevelopmental deficits. Preterm deliveries prior to 28 weeks gestational age have the greatest morbidity.³

The incidence of preterm birth has been increasing in many industrialized countries since the early 1980s. In Canada, the rate rose from 6.3% of live births in 1981-1983, to 6.8% in 1992-1994, to 7.6% in 2000.^{4,5} The financial and social costs place an enormous burden on the healthcare system,⁶ and every effort should be made to prevent or inhibit preterm labour.

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Causes of preterm birth

- spontaneous — 30-50%
- multiple gestation — 10-30%
- preterm premature rupture of membranes — 5-40%
- preeclampsia/eclampsia — 12%
- antepartum hemorrhage — 6-9%
- fetal growth restriction — 2-4%
- other, i.e. cervical incompetence, etc. — 8-9%

Risk factors

- Maternal**
- previous preterm delivery
 - smoking
 - substance abuse
 - black race
 - extremes of age (< 18 or > 40)
 - low pre-pregnancy body mass index
 - anemia, with hemoglobin < 100 g/L
 - poor prenatal care
 - stress — e.g. single mother, anxiety, depression
 - abdominal surgery during pregnancy, physical exertion
 - infections — e.g. bacteriuria and/or pyelonephritis, sexually transmitted diseases, periodontal disease, systemic

- Uterine**
- distension, i.e. multiple gestation, polyhydramnios
 - uterine anomaly
 - fibroids
 - diethylstilbestrol
 - prior cervical surgery

- Fetal**
- congenital anomalies
 - intrauterine growth restriction

- Placental**
- placenta previa
 - placental abruption
 - history of vaginal bleeding

References:

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3. Wood NS et al. *NEJM* 2000;343(6):378-84.
4. Joseph KS et al. *NEJM* 1998;339(20):1434-9.
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7. American College of Obstetricians and Gynecologists. *ACOG technical bulletin no. 206*. Washington, DC, 1995.

Evaluation

- Diagnostic**
- persistent uterine contractions — four every 20 min or eight every 60 min AND
 - documented cervical change or effacement \geq 80%, or cervical dilatation > 2 cm
- History inquiry**
- gestational age — last menstrual period or early ultrasound (US) dating
 - contractions, per vaginam (PV) fluid, PV bleed, fever, rigors
 - brief update of current pregnancy
 - symptoms — e.g. urinary tract infection
- Contraction pattern**
- Braxton-Hicks — irregular intervals, long spacing, stable intensity, no cervical change, discomfort mainly in lower abdomen and relieved by sedation
 - true labour — regular intervals, progressively shortening, increasing intensity, cervical change, discomfort in lower abdomen and back
- Physical examination**
- palpate abdomen for contractions, elicit presentation if possible
 - sterile speculum examination
 - rule out ruptured membranes and antepartum hemorrhage
 - visually examine cervix for dilatation
 - obtain swabs to test for fetal fibronectin (fFN) and for possible infections — endocervical for gonorrhoea and chlamydia, vaginal for bacterial vaginosis, cervicovaginal for fFN, rectovaginal for Group B streptococcus (strep B)
 - US — cervical length, presentation, biophysical profile, estimated fetal weight
 - urine culture for bacteriuria and pyelonephritis

Management

Once diagnosis of preterm labour is established, even if the cervix has not reached 2 cm dilatation or 80% effacement

For gestation \leq 34 weeks

- antibiotic strep B prophylaxis, unless a recent rectovaginal swab was negative
- corticosteroids to hasten fetal lung maturity — two doses of betamethasone 12 mg intramuscular injection (IM) 24 hours apart, or dexamethasone 6 mg IM every 12 hours for four doses
- tocolytics to allow transfer to a tertiary care centre — observe patient for side effects

For gestation > 34 weeks

- as above, but omit corticosteroids and tocolytics
- transfer to tertiary care

Tocolytics

- regardless of agent, don't exceed 48 hours
- magnesium sulfate — intracellular calcium antagonist, 4-6 g loading dose, then 2-4 g intravenously (IV) every hour
- nifedipine (off-label) — calcium channel blocker, 5-10 mg sublingually every 15-20 min (up to four times), then 10-20 mg orally every 4-6 hours
- indomethacin (off-label) — prostaglandin inhibitor, 50-100-mg rectal suppository, then 25-50 mg orally every six hours

Strep B prophylaxis

- recommended — penicillin G, 5 million units IV, then 2.5 million U IV every four hours until delivery
 - alternative — ampicillin, 2 g IV loading dose, then 1 g IV every four hours until delivery
- In patients allergic to penicillin**
- recommended — clindamycin, 900 mg IV every eight hours until delivery
 - alternative — erythromycin, 500 mg IV every six hours until delivery

Potential adverse effects⁷

- magnesium sulfate — pulmonary edema, profound hypotension,* profound muscular paralysis,* maternal tetany,* cardiac arrest,* respiratory depression*
 - indomethacin — renal failure,[†] hepatitis,[†] gastrointestinal bleeding[†]
 - nifedipine — transient hypotension
- * usually only with toxic levels
† associated with chronic use