

# Risk factors for cerebral palsy

## Clinical history indicating risk for cerebral palsy

The full causal pathway is a complex interplay between several risk factors across multiple epochs. Note that as many as one third of children who are diagnosed with cerebral palsy lack traditional risk factors for cerebral palsy.



### Preconception

Previous stillbirths, miscarriage(s), use of reproductive technology, low socio economic status



### and/or during pregnancy

Intra-uterine growth restriction, prematurity, maternal thyroid disease, pre-eclampsia, placental abnormalities, bleeds, infection, substance abuse, multiple births, birth defects



### and/or perinatal

Acute intrapartum hypoxic event, stroke, seizures, hypoglycaemia, jaundice, infection



### and/or postnatal

Stroke, infections, accidental and non-accidental brain injury

Adapted with permission from: Novak et al 2017. Early, Accurate Diagnosis and Early Intervention in Cerebral Palsy. *JAMA Pediatr.* 2017;171(9):897-907. doi:10. 1001/jamapediatrics.2017.1689  
Available from: <http://jamanetwork.com/journals/jamapediatrics/article-abstract/2636588>

# Risk factors for cerebral palsy

## Newborn detectable risks

### Born premature cerebral palsy risk factor

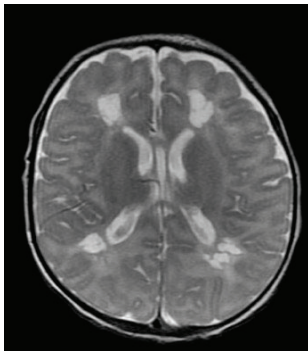
< 28 weeks = 3-9%

28–31 weeks = 3-5%

32–36 weeks = <1%

> 37 weeks = 0.1

### Abnormal neuroimaging



White matter Injury  
PVL, IVH Grade III IV, PVL  
corona radiata above  
PLIC, ventriculomegaly,  
arterial infarction,  
maldevelopment.

### Complex course

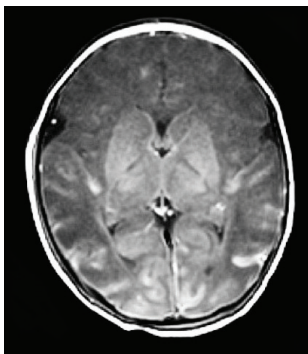
Neonatal intensive care unit (NICU) admission, low birth weight, exposure to infection/ inflammation early/postnatal/ late pre-natal, seizures, necrotising enterocolitis, bronchopulmonary dysplasia, chronic neonatal lung disease, severe retinopathy of prematurity (ROP stage 4 or 5), surgery for Patent Ductus Arteriosus. Developmental and neurobehavioural risk factors - difficulty with oral feeding.

### Term-born cerebral palsy risk factor

#### Neonatal encephalopathy

#### Neonatal stroke

### Abnormal neuroimaging



Grey matter injury basal  
ganglia/ thalamus, arterial  
infarction, haemorrhage,  
Combined white and grey  
matter, involvement PLIC,  
myelination asymmetry,  
congenital malformations

### Complex course

NICU admission, low birth weight, intrauterine growth restriction, meconium aspiration syndrome, neonatal seizures, infections, hypoglycaemia, multiple births, surviving twin after death of a co-twin, maternal age over 35 years, low apgars, birth defects, family history of neurodevelopmental condition.