

DOWNLOAD PDF PATHWAYS TO CEREBRAL PALSY INVOLVING SIGNS OF BIRTH ASPHYXIA

Chapter 1 : Cerebral palsy | Cerebral Palsy Alliance

It was once thought that asphyxia due to complications at birth was the cause of Cerebral Palsy. Now it is estimated that asphyxia accounts for only % of all Cerebral Palsy cases. Events that can lead to birth asphyxia include, but are not limited to.

Preeclampsia, or high blood pressure. An abnormal position of the fetus. Uterine or vasa previa rupture. Mild HIE may be characterized by poor feeding, excessive crying, irritability, or slightly increased muscle tone in the infant. More moderate HIE may cause lethargy, significantly low muscle tone, slow or absent reflexes, and even seizures. Infants with moderate HIE can recover or may end up with only mild disabilities. Severe HIE usually leads to lasting disabilities and more severe disabilities. Infants with severe HIE may experience many of the above symptoms, but the seizures may not occur right away. When they do occur, seizures are likely to be worse and to resist normal treatment. Other symptoms of severe HIE include dilated pupils, no reaction to stimuli, irregular breathing, absent infant reflexes, irregular heart rate and blood pressure, stupor, and coma.

Diagnosing HIE If your infant shows any signs of HIE after being born, or if there had been any kind of complication or trauma during delivery that may have caused HIE, there are tests that can be done to try to confirm the brain damage, to see where it occurred, and to determine the severity. These include imaging tests like MRIs that can image the brain to look for areas of damage. Doctors also look at the pH of a sample of umbilical cord artery blood. If it is less than seven, this supports a diagnosis of HIE. The healthier the baby, the higher the score is. An Apgar score of three or less is also used as supporting evidence for HIE. There are treatments that can help, but they need to be administered in a timely manner. These include making sure the infant has adequate ventilation, possibly using a respirator to support breathing, maintaining a certain blood pressure, managing fluids, managing blood sugar levels, and treating any seizures. It is also important to avoid overheating the infant because this can worsen the condition and cause worse long-term outcomes. While overheating can cause more harm, researchers have actually developed a treatment that uses cold temperatures to treat infants with HIE. Studies have shown that babies that have suffered moderate to severe HIE and that undergo this hypothermia treatment have better outcomes. It is thought that the cold temperatures slow the death of brain cells and prevent the formation of toxic substances in the brain that cause damage. For this treatment the infant is cooled to about 33 degrees Celsius for 72 hours. Preventing HIE Hypothermia treatment has been proven to be an effective way to limit the lasting damage and long-term disabilities that babies born with HIE experience. However, there is no cure for HIE and any baby may face disability because of it, regardless of treatment. The best way to avoid it is to prevent the damage in the first place. Doctors and parents can work together to ensure safe labor and delivery, even while not all complications can be foreseen. Regular checkups for the mother to maintain her health, monitoring the fetus during labor and delivery, and having trained and experienced health care practitioners on hand all help to prevent the kinds of complications that can lead to HIE. HIE can lead to serious consequences for a baby and the family. If your child suffered because of HIE during labor and delivery, you need to know your rights.

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Chapter 2 : Cerebral Palsy and Hypoxic Ischemic Encephalopathy | Cerebral Palsy Guidance

Silver M. Claim that events before birth cause cerebral palsy is disputed. to cerebral palsy involving signs of birth asphyxia. and causal pathways.

Cerebral palsy What is Cerebral palsy? Cerebral palsy CP is a physical disability that affects movement and posture. It is a permanent life-long condition, but generally does not worsen over time. It is due to damage to the developing brain either during pregnancy or shortly after birth. It affects body movement, muscle control, muscle coordination, muscle tone, reflex, posture and balance. People who have cerebral palsy may also have visual, learning, hearing, speech, epilepsy and intellectual impairments. For more information about cerebral palsy and the wonderful research being done, visit our Cerebral Palsy Alliance Research Foundation website.

Symptoms There are some signs that may indicate a child has cerebral palsy. Not all signs are visible at birth and may become more obvious as babies develop. Depending on the level of severity of cerebral palsy, toddlers and children may experience difficulties with physical development such as: In NSW, questions relating to developmental milestones are described in the Personal Health Record book Blue Book provided to families when their child is born. The parts of the body affected by cerebral palsy, the level of severity and combination of symptoms can differ for each person. For example, one person may have a weakness in one hand and find tasks like writing or tying shoelaces challenging. Another person may have little or no control over their movements or speech and require 24 hour assistance. People with cerebral palsy may experience uncontrolled or unpredictable movements, muscles can be stiff, weak or tight and in some cases people have shaky movements or tremors. People with severe cerebral palsy may also have difficulties with swallowing, breathing, head and neck control, bladder and bowel control, eating and have dental and digestive problems.

The main types of cerebral palsy The main types of cerebral palsy are: Quadriplegia a form of bilateral cerebral palsy where both arms and legs are affected. The muscle of the trunk, face and mouth are often also affected. Diplegia a form of bilateral cerebral palsy where both legs are affected. The arms may be affected to a lesser extent. Hemiplegia a form of unilateral cerebral palsy where one side of the body one arm and one leg is affected. There are other classifications for severity. This is the most common form of cerebral palsy where muscles feel stiff and tight. Mixed type “ where there is a combination of damage to the brain. Causes Cerebral palsy CP is a physical disability that affects movement and posture. It is due to damage to the developing brain either during pregnancy or shortly after birth For most people with cerebral palsy, the cause is unknown and there is no single cause. Researchers have determined that only a very small percentage of cases of cerebral palsy are due to complications at birth e. Today, it is accepted that cerebral palsy usually arises from a series of causal pathways, i. Although prematurity is the largest risk factor for cerebral palsy, it is the sequence of events causal pathways that led to the premature birth that may have caused the cerebral palsy, rather than the premature birth itself. In 13 out of 14 cases of cerebral palsy in Australia, the brain injury leading to cerebral palsy occurs either in the uterus while the mother is pregnant or before 1 month of age. Stroke is the most common cause in babies who acquire cerebral palsy after 1 month of age. The stroke may occur spontaneously or arise from surgical or heart complications. Risk factors Risk factors do not cause cerebral palsy. However, the presence of some risk factors may lead to an increased chance of a child being born with cerebral palsy. Some risk factors for cerebral palsy have been identified. Who is at greatest risk? The Australian Cerebral Palsy Register Report has identified four groups that, statistically, have a greater risk of cerebral palsy. This may be a result of prematurity or slow intrauterine growth. However small these statistics, they are enough to suggest that there might be some genetic factors involved in cerebral palsy. Researchers generally believe that a genetic disposition to certain characteristics, i. **Diagnosis** Cerebral palsy is a complex disability and diagnosis is not always an easy process. Doctors may suspect cerebral palsy if a baby has slow motor development, has tight or floppy muscle tone, or displays unusual postures. The period of time parents may have to wait before their child is given an official diagnosis of cerebral palsy can vary. Very

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premature babies are usually watched carefully and may have an early MRI scan magnetic resonance imaging. However, most children with cerebral palsy are not born prematurely. Most are born at full term and it is not until they do not meet the usual infant milestones that any form of disability is considered. A MRI might show that they have an injury to the brain, but at that stage it is often too early to predict the impact. The General Movements Assessment can be conducted from birth until 5 months of age. It is a strong predictor of cerebral palsy, particularly when certain changes to the brain are seen on an MRI. However, General Movements Assessment cannot predict the severity of cerebral palsy. How do doctors diagnose cerebral palsy? Some children may have very relaxed, floppy muscles, while others have stiff, tight muscles. Doctors will also look for any unusual postures or if the child favours one side over the other. One of the frustrations for parents is that sometimes a diagnosis can take a long time, with repeated tests and visits to specialists. This may be because the child has a mild form of cerebral palsy, but it could also be because the doctor needs to make sure it is not another type of movement disorder that may be progressive get worse over time. What is the General Movements Assessment? The General Movements Assessment is a non-invasive and cost-effective way to identify neurological issues which may lead to cerebral palsy and other developmental disabilities. The assessment can be completed from birth to 20 weeks of age corrected for prematurity. Infants whose general movements are absent or abnormal are at higher risk of neurological conditions, in particular cerebral palsy. Intervention can start very early, with potentially better outcomes, if an infant is diagnosed as at risk of cerebral palsy using the General Movements Assessment. How is the assessment done? General movements are assessed with the awake infant lying on their back while they are calm and alert. The infant should not have any toys or pacifiers and parents could be watching nearby but not interacting with their baby. The baby is videoed for minutes and the assessment is scored from the video. In Australia, a growing number of allied health and medical personnel have been trained to observe and score General Movements Assessments. Should my child have the General Movements Assessment? The assessment is not currently used as a screening tool for healthy babies. Please speak to your medical practitioner or therapist if you have any concerns about your baby. Who can do the assessment? A growing number of tertiary hospitals across Australia also have staff who are able to use the assessment. Videos taken by parents and others can be used by assessors. To take a video, the baby should be lying on their back, lightly dressed no socks and in a calm state. Do not interact with the baby. Babies should not be sucking a dummy or playing with a toy. Living with Cerebral palsy Sources: Recommendations from the SCPE collaborative group for defining and classifying cerebral palsy. *Developmental Medicine and Child Neurology*, 49 Suppl 1 , Brain Development, 31 7 , *Developmental Disability Research Reviews*, 17 2 , Establishing the diagnosis of cerebral palsy. *Clinical Obstetrics and Gynecology*, 51 4 ,

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Chapter 3 : Perinatal Institute

Enhanced PDF; Standard PDF (KB) ; Cerebral palsy (CP) is the most common cause of neurodevelopmental disability in children. It describes a heterogeneous group of developmental, non-progressive disorders of posture and movement control, co-occurring with a range of cognitive, behavioural, and sensory impairments.

Glossary What is Cerebral Palsy? In others, the damage is a result of injury to the brain either before, during, or after birth. In either case, the damage is not repairable and the disabilities that result are permanent. Children with CP exhibit a wide variety of symptoms, including: The symptoms of CP differ in type and severity from one person to the next, and may even change in an individual over time. Symptoms may vary greatly among individuals, depending on which parts of the brain have been injured. All people with cerebral palsy have problems with movement and posture, and some also have some level of intellectual disability, seizures, and abnormal physical sensations or perceptions, as well as other medical disorders. People with CP also may have impaired vision or hearing, and language, and speech problems. While one child with severe CP might be unable to walk and need extensive, lifelong care, another child with mild CP might be only slightly awkward and require no special assistance. However, as the child gets older, certain symptoms may become more or less evident. A study by the Centers for Disease Control and Prevention shows the average prevalence of cerebral palsy is 3. There is no cure for cerebral palsy, but supportive treatments, medications, and surgery can help many individuals improve their motor skills and ability to communicate with the world. The signs of cerebral palsy usually appear in the early months of life, although specific diagnosis may be delayed until age two years or later. Some infants with CP have abnormal muscle tone. Decreased muscle tone hypotonia can make them appear relaxed, even floppy. In some cases, an early period of hypotonia will progress to hypertonia after the first 2 to 3 months of life. Children with CP may also have unusual posture or favor one side of the body when they reach, crawl, or move. Some early warning signs: Cerebral palsy is caused by abnormal development of part of the brain or by damage to parts of the brain that control movement. This damage can occur before, during, or shortly after birth. Some causes of acquired cerebral palsy include brain damage in the first few months or years of life, brain infections such as bacterial meningitis or viral encephalitis, problems with blood flow to the brain, or head injury from a motor vehicle accident, a fall, or child abuse. In many cases, the cause of cerebral palsy is unknown. Possible causes include genetic abnormalities, congenital brain malformations, maternal infections or fevers, or fetal injury, for example. The following types of brain damage may cause its characteristic symptoms: The white matter of the brain is responsible for transmitting signals inside the brain and to the rest of the body. These gaps in brain tissue interfere with the normal transmission of signals. Any interruption of the normal process of brain growth during fetal development can cause brain malformations that interfere with the transmission of brain signals. Mutations in the genes that control brain development during this early period can keep the brain from developing normally. Bleeding in the brain intracranial hemorrhage. Bleeding inside the brain from blocked or broken blood vessels is commonly caused by fetal stroke. Other types of fetal stroke are caused by malformed or weak blood vessels in the brain or by blood-clotting abnormalities. Maternal infection, especially pelvic inflammatory disease, has also been shown to increase the risk of fetal stroke. Severe lack of oxygen in the brain. Asphyxia, a lack of oxygen in the brain caused by an interruption in breathing or poor oxygen supply, is common for a brief period of time in babies due to the stress of labor and delivery. This kind of damage can also be caused by severe maternal low blood pressure, rupture of the uterus, detachment of the placenta, or problems involving the umbilical cord, or severe trauma to the head during labor and delivery. Low birthweight and premature birth. Tiny babies born at very early gestational ages are especially at risk. Twins, triplets, and other multiple births -- even those born at term -- are linked to an increased risk of cerebral palsy. Infections such as toxoplasmosis, rubella German measles, cytomegalovirus, and herpes, can infect the womb and placenta. Inflammation triggered by infection may then go on to damage the developing nervous system in

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an unborn baby. Maternal fever during pregnancy or delivery can also set off this kind of inflammatory response. Blood type incompatibility between mother and child. Exposure to toxic substances. Mothers who have been exposed to toxic substances during pregnancy, such as methyl mercury, are at a heightened risk of having a baby with cerebral palsy. Mothers with thyroid abnormalities, intellectual disability, excess protein in the urine, or seizures. Mothers with any of these conditions are slightly more likely to have a child with CP. There are also medical conditions during labor and delivery, and immediately after delivery that act as warning signs for an increased risk of CP. However, most of these children will not develop CP. Babies with cerebral palsy are more likely to be in a breech position feet first instead of head first at the beginning of labor. Babies who are unusually floppy as fetuses are more likely to be born in the breech position. Complicated labor and delivery. A baby who has vascular or respiratory problems during labor and delivery may already have suffered brain damage or abnormalities. Small for gestational age. Babies born smaller than normal for their gestational age are at risk for cerebral palsy because of factors that kept them from growing naturally in the womb. A low score at minutes after delivery is often considered an important sign of potential problems such as CP. Severe, untreated jaundice can kill brain cells and can cause deafness and CP. An infant who has seizures faces a higher risk of being diagnosed later in childhood with CP. Cerebral palsy related to genetic abnormalities cannot be prevented, but a few of the risk factors for congenital cerebral palsy can be managed or avoided. Rh incompatibilities can also be managed early in pregnancy. Acquired cerebral palsy, often due to head injury, is often preventable using common safety tactics, such as using car seats for infants and toddlers. People have stiff muscles and awkward movements. Forms of spastic cerebral palsy include: Children with spastic hemiplegia generally walk later and on tip-toe because of tight heel tendons. The arm and leg of the affected side are frequently shorter and thinner. Some children will develop an abnormal curvature of the spine scoliosis. A child with spastic hemiplegia may also have seizures. Speech will be delayed and, at best, may be competent, but intelligence is usually normal. Tendon reflexes in the legs are hyperactive. Toes point up when the bottom of the foot is stimulated. Tightness in certain leg muscles makes the legs move like the arms of a scissor. Children may require a walker or leg braces. Intelligence and language skills are usually normal. It is caused by widespread damage to the brain or significant brain malformations. Children will often have severe stiffness in their limbs but a floppy neck. They are rarely able to walk. Speaking and being understood are difficult. Seizures can be frequent and hard to control. Hyperactivity in the muscles of the face and tongue makes some children grimace or drool. They find it difficult to sit straight or walk. Intelligence is rarely affected in these forms of cerebral palsy. Children with ataxic CP will often have poor coordination and walk unsteadily with a wide-based gait. They have difficulty with quick or precise movements, such as writing or buttoning a shirt, or a hard time controlling voluntary movement such as reaching for a book. For example, a child with mixed CP may have some muscles that are too tight and others that are too relaxed, creating a mix of stiffness and floppiness. Approximately 30% of individuals with CP will be intellectually impaired. Mental impairment is more common among those with spastic quadriplegia than in those with other types of cerebral palsy. As many as half of all children with CP have one or more seizures. Children with both cerebral palsy and epilepsy are more likely to have intellectual disability. Delayed growth and development. Children with moderate to severe CP, especially those with spastic quadriplegia, often lag behind in growth and development. In babies this lag usually takes the form of too little weight gain. In young children it can appear as abnormal shortness, and in teenagers it may appear as a combination of shortness and lack of sexual development. The muscles and limbs affected by CP tend to be smaller than normal, especially in children with spastic hemiplegia, whose limbs on the affected side of the body may not grow as quickly or as long as those on the normal side. Spinal deformities and osteoarthritis. Spinal deformities can make sitting, standing, and walking difficult and cause chronic back pain. Pressure on and misalignment of the joints may result in osteoporosis a breakdown of cartilage in the joints and bone enlargement. Some children with CP have difficulty understanding and organizing visual information. Other children may have defective vision or blindness that blurs the normal field of vision in one

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or both eyes. Impaired hearing is also more frequent among those with CP than in the general population. Some children have partial or complete hearing loss, particularly as the result of jaundice or lack of oxygen to the developing brain.

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Chapter 4 : Birth Asphyxia | Birth Injury Guide

Birth asphyxia occurs when a baby is cut off from oxygen before or during childbirth and is a common cause of brain damage and cerebral palsy. Skip links Skip to primary navigation.

Birth Asphyxia Birth injuries are serious. Even the mildest birth injuries can be expensive and can inflict unnecessary pain on your infant. More severe birth injuries can hurt your baby in more horrible ways such as severe brain injuries, paralysis, cerebral palsy, and death. One such birth injury happens when the baby has been deprived of oxygen. This is called birth asphyxia or perinatal asphyxia. If you have more questions about perinatal asphyxia or if you wonder if your baby could have been a victim of perinatal asphyxia, take a look at the following questions. What is Birth Asphyxia? Birth asphyxia – which is the name for when a child stops breathing and experiences oxygen deprivation- leads to anoxia or hypoxia, which is the name for whatever oxygen level the brain experiences. Anoxia is when there is zero oxygen in the brain or muscles, and hypoxia is when there is only a low amount of oxygen in those areas. There are number of tests that can confirm perinatal asphyxia. These may not be specific enough, so other more thorough tests include the SPECT tests, a form of CT scan that checks areas of the brain for blood flow and metabolism, and evoked potential tests, tests that evaluate the visual, auditory, and sensory pathways. The most important thing to do is to get your baby tested for birth asphyxia. Brain injuries are serious and get worse without treatment. From there, you can work with a specialist as to how to care for your baby, sometimes treatment that may require medication or other types of therapy. The specialist should be able to effectively communicate how you can care for your baby. What are the Risks of Birth Asphyxia? Birth asphyxia could be very severe. Your baby might have stopped breathing for only a few seconds, causing hypoxia, or your baby could have birth asphyxia, could stop breathing for minutes, cause anoxia, and lead to other birth injuries such as Hypoxic Ischemic Encephalopathy HIE and cerebral palsy – two conditions that could affect your baby for the rest of his or her life. What are the Symptoms? Some obvious symptoms include not breathing or weak breathing, skin color is bluish or pale, or the baby is experiencing seizures. Other symptoms that your doctor can aid you with includes amniotic fluid is stained with meconium, heart rate is low, muscle tone is poor or reflexes are weak, or if there is too much acid in the blood.

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Chapter 5 : Cerebral Palsy: Hope Through Research | National Institute of Neurological Disorders and Stroke

"Birth asphyxia" is an outdated term that may wrongly convey that a baby born with signs of fetal and neonatal compromise must have undergone an acute hypoxic event in late labor and/or birth.

Cytomegalovirus Herpes simplex More recently, interest has been directed at other bacterial and mycoplasmal infections chorioamnionitis, bacterial vaginosis, urinary tract infections and whether they result in premature labour - the latter a risk factor for CP. A study from California showed an association between CP and infection in term babies weighing over 3800 gms. A fever of over 38 degrees in labour was associated with a 9-fold risk of CP overall and a 19 fold increase in quadriplegia. Chorioamnionitis specifically had a risk of 4. The group investigated this by looking for inflammatory markers in the neonatal blood spots of a group of CP children more than 3 years old, and comparing their concentrations with those found in the neonatal blood spots of a group of control children. A complex picture emerged, but there were significantly raised concentrations of two groups of chemicals in the blood spots of the CP children 8. The inflammatory markers were thought to be secondary to the acute infections. The coagulation factors pointed, perhaps separately, to the significance of coagulopathy and interruption of cerebral blood supply - even at a microvascular level - as pathways to brain damage and consequent CP. Studies showing a relationship between peri- and post-natal infections have now been reported from the UK One theoretical model to link this findings as cause and effect was proposed by Leviton in TNF might then stimulate prostaglandin release and cause preterm labour, and the preterm baby would then face a series of hazards particularly hypotension and hypoxia that could lead to brain damage. Alternatively the TNF might target specific areas of the brain and cause a localised inflammatory response resulting in permanent damage. Infection and preterm labour There are reported associations between bacterial vaginosis 12 , urinary tract infections and asymptomatic bacteriuria 13 and preterm labour. The significance of these in relation to CP needs elucidation. CP is increased in preterm babies 14 , but is unclear whether the causative pathway is through the complications of prematurity alone, or whether cytokines cause neuro-chemical damage as appears to be the case with chorioamnionitis and periventricular leukomalacia see below Treatment of asymptomatic bacteriuria probably prolongs pregnancy 15 , and treatment of women with bacterial vaginosis and a previous preterm birth reduces the number of preterm deliveries However neither this nor the other reviews include good quality data on the long-term neurological outcome for the neonates. However, no long term benefit is recognised in giving antibiotics to women in preterm labour with intact membranes, although there is some reduction in NEC Infection and Periventricular leukomalacia Support for the concept that chorioamnionitis might cause brain damage in the fetus came from studies in America and France in Only 4 of these had ever been hypotensive, which was previously thought to be a major pathway to PVL, though other studies had not reported this consistently. They examined 20 perinatal risk factors for morbidity and univariate analysis showed that only chorioamnionitis and prolonged rupture of the membranes PROM were significantly associated with PVL. Similar results came from France Although not within the scope of this review, it is important to remember that post-natal hypotension can lead to PVL, and Grade 4 IVH or periventricular venous haemorrhagic infarction cause white matter damage with a high risk of neurological impairment in survivors. Cystic periventricular leukomalacia results from extensive necrosis of white matter adjacent to lateral ventricles in the brain. This area includes the cortico-spinal pyramidal tracts, and the optic radiations, so neurological consequences include motor deficits such as diplegia, and cortical blindness. Initial studies suggested hypoxia and underperfusion as risk factors associated with PVL, and it was therefore ischaemic in origin. Recently neuro-chemically mediated injury has been recognised as a potential mechanism for white matter damage. Normally it is detected by ultrasound scans of the brains of infants undergoing intensive care. It shows as an echodensity that may or may not progress to cystic changes. Autopsy findings in infants who die with PVL show cell swelling and death of brain cells, with acute inflammatory changes. After death of the neural cells

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areas of gliosis mild cases or cyst formation severe cases develop. These may occur at the microscopic level with no obvious scan findings in the mild cases. If cysts develop, they become apparent from about 12 days after the causative insult. Thus a baby who develops cystic PVL in the first week of life has suffered an antenatal insult. The ultrasound findings are graded into: Other studies have reported similar but not identical outcomes with the size and site of the cysts being important. A preterm baby with a left sided flare. It shows the typical triangular shape flaring out from the lateral tip of the lateral ventricle. The ventricles are now dilated. A baby with bilateral cystic changes arrowed see reference to Perlman et al in show main text Figure 3 A simplified diagram of the cortico-spinal tracts, to et al in et how PVL and hydrocephalus may affect them. Deficiencies of thyroid and iodine in the mother can have a profound effect on the fetus. The fetus can not produce its own thyroid hormone until late in the first trimester and relies on maternal T4 crossing the placenta; T4 being important for neuronal development. Iodine deficiency is linked with a spectrum of motor disorders. Fetal growth Growth restriction is one of the most important risk factors associated with CP, although the association appears more significant for term infants than for premature infants 24 , This may be because the term infants have been under stress for a longer period of time or because the premature symmetrically growth restricted babies have poor survival rates and are therefore not reflected in the statistics. This link with CP may be that growth restricted babies are more vulnerable to insult, particularly intrapartum stress Pre-eclampsia and Preventative Treatment PET itself is associated with a decreased risk of CP, independent of magnesium sulphate usage It is associated with decreased IVH intraventricular haemorrhage in the preterm infant and a decrease in infection 25 that might help explain this. Equally, there is a high incidence of elective delivery in this group 23 Mode of delivery, or more specifically, delivery without labour appears to have a protective effect against neurological damage. Steroids are given when there is a risk of premature delivery, and may be another confounding variable in assessing the effect of PET. Retrospective and observational studies suggest that magnesium sulphate, when used for eclampsia or as a tocolytic, may have a protective effect against CP 9 , with 3 possible mechanisms: Reversing cerebral arterial vasoconstriction of middle cerebral artery Releasing endothelial prostacyclins Inhibiting platelet aggregation A MAGnet trial Magnesium and neurological endpoints trial was therefore set up as a double-blind RCT, comparing magnesium with a placebo. PET was excluded as a confounding variable. Unfortunately there were significantly higher deaths reported in the magnesium arm and the trial had to be stopped prematurely Pathways to cerebral palsy involving signs of birth asphyxia. Epidemiology and Causal Pathways. Clin Devlop Med ; Survival and cerebral palsy in low birthweight infants: Paediatric and Perinatal Epidemiology ;6: Antenatal antecedents of moderate and severe cerebral palsy. Paediatric and Perinatal Epidemiology ; The Special case of Multiple Pregnancy? Pharoah PO, Adi Y. Consequences of in-utero death in a twin pregnancy. Nelson K et al. Case-control study of antenatal and intrapartum risk factors for cerebral palsy in very preterm singleton babies. Perinatal infection is an important risk factor for cerebral palsy in very-low-birthweight infants. Leviton A, Paneth N White matter damage in preterm newborns: Early Human Development ; Abnormal bacterial colonisation of the genital tract and subsequent preterm delivery and late miscarriage. Rupture of fetal membranes and premature delivery associated with Group B Streptococci in urine of pregnant women. Lancet ;Iii;, Abstract Pathways to cerebral palsy involving preterm birth. Clin Dev Med ; Antibiotics for asymptomatic bacteriuria in pregnancy. Cochrane Database of Systematic Reviews, Interventions for treating bacterial vaginosis in pregnancy. Cochrane Database of Systematic Reviews, , Abstract Antibiotics for preterm premature rupture of the membranes. Antibiotics for preterm labour with intact membranes. Ampicillin and Metronidazole treatment in preterm labour: Br J Obst Gynae ; Bilateral cystic Periventricular Leukomalacia in the Premature Infant: Dev Med Child Neurol ; Neurodevelopmental outcome at years in preterm infants with periventricular leukomalacia. Intrauterine growth and spastic cerebral palsy 1: Am J Obstet Gynecol ; Childhood neurological morbidity and its association with gestational age, intrauterine growth retardation and perinatal stress, Abstract Antecedents of cerebral palsy in very low-birth weight infants. Clinics in Perinatology ;27 2: Is tocolytic magnesium sulphate associated with increased total

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paediatric mortality? Lancet ; , Abstract Obstetric risk factors for periventricular leucomalacia among preterm infants. Br J Obstet Gynaecol ;

Chapter 6 : What Are the Long-Term Effects of Birth Asphyxia?

Birth injuries are serious. Even the mildest birth injuries can be expensive and can inflict unnecessary pain on your infant. More severe birth injuries can hurt your baby in more horrible ways such as severe brain injuries, paralysis, cerebral palsy, and death.

Chapter 7 : Cerebral Palsy and Birth Asphyxia | Cerebral Palsy Guidance

Cerebral palsy is caused by brain damage and the most common way that brain damage occurs while a baby is being born is through asphyxiation, or being deprived of oxygen.. One of the most common types of oxygen deprivation is called hypoxic ischemic encephalopathy, or H.