ELF EUROPEAN LUNG FOUNDATION

Preterm birth and the lungs

In recent years, the number of children surviving premature birth has grown. This means that there is potential to be an increase in the number of children and adults in the future with lung problems due to prematurity.

This fact sheet looks at how preterm birth affects the lungs, what can be done to reduce the impact of problems associated with preterm birth, both as an infant and later in life, and advice for parents of prematurely born babies.

What is preterm birth?

The average pregnancy lasts for approximately 37-42 weeks. When a baby is born before the completed 37 weeks of pregnancy, it is considered preterm. Those born before the 28th week of pregnancy are considered extremely preterm.

Severity of preterm birth	Week of Pregnancy
Late preterm	34 - 36 weeks
Moderately preterm	32- 33 weeks
Very preterm	28 - 31 weeks
Extremely preterm	Less than 28 weeks

75% of preterm births are born after 32 weeks, although the babies with the most severe health problems are seen within the 'extremely preterm' category.

Nearly 15 million babies worldwide and about 500,000 babies in Europe are born preterm each year, one in ten. In the light of these numbers, preterm infants represent Europe's largest child patient group and preterm birth has become the major cause of infant death and disabilities from birth in both developed and developing countries.

Are there any risk factors associated with preterm birth?

In about half of all cases of preterm birth, the exact cause of the early delivery remains unknown. However, a number of risk factors have been identified which are likely to increase the chances of preterm labour, such as maternal infections, very young or very old (aged under 17 or over 35) mothers, smoking and even passive smoking.

What health problems could affect babies born preterm?

Compared with full-term babies, preterm infants are at greater risk of developing health complications. The earlier the baby is born, the less developed its organs will be, and the higher the risk of medical complications later. These include cerebral palsy, sensorial and motor disabilities, learning and behavioural disorders and, commonly, problems with the lungs.

How is preterm birth linked to lung disease?

The lungs are one of the last organs to develop as a baby is growing inside the womb. This means that when a baby is born prematurely his/her lungs are not fully developed which may lead to both short and long-term 'health problems'.

Short term problems

Bronchopulmonary Dysplasia (BPD)

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The most common lung disease affecting preterm babies is a condition known as Bronchopulmonary Dysplasia (BPD). It is characterised by rapid breathing, shortness of breath and gasping and coughing to get more oxygen.

The condition usually develops as a consequence of preterm babies being given mechanical ventilation. This is when ventilators breathe for the baby until the lungs can do it themselves. Although this process is often essential to the survival of the baby it can damage the baby's lungs, causing inflammation leading to the development of BPD.

BPD can be a temporary condition, but for some children, symptoms can persist into adulthood, increasing the risk of developing chronic lung disease such as chronic obstructive pulmonary disease (COPD).

Respiratory distress syndrome (RDS)

RDS is the leading cause of death in babies born prematurely. It occurs in babies whose lungs are not fully developed and is mainly caused by a lack of a protective substance called surfactant. This substance helps to keep a baby's lungs inflated with air and when babies suffer a shortage of it, they need to be given oxygen through a tube and a substitute for surfactant.

RDS can lead to a higher risk of developing BPD and severe respiratory infections in the first two years of life and an increased likelihood of asthma later in life.

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Respiratory syncytial virus (RSV)

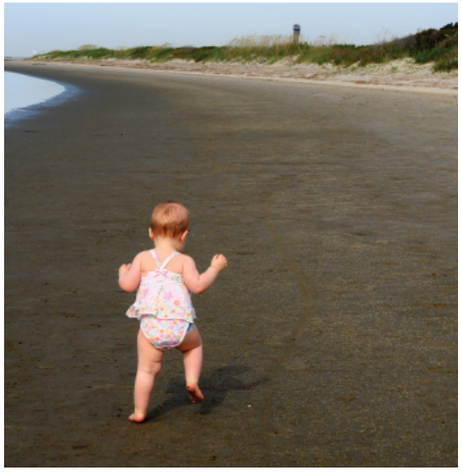
Nearly all babies will contract RSV by the time they are the age of two. For most babies who are born at full term, the symptoms of the virus are similar to a common cold. Full-term babies get antibodies from their mothers during pregnancy which help to fight RSV and other viruses. However, when a baby is born even only a few weeks early, they do not get enough of these antibodies before birth.

This lack of antibodies, combined with the fact that the lungs are not yet fully developed, means that prematurity is the greatest risk factor for severe RSV infection. The symptoms of the virus may include persistent coughing and wheezing, high fever and sudden gasping for breath. If your baby is showing these symptoms, it is important you contact your doctor as soon as possible.

Parents can help prevent their babies contracting the infection by prophylaxing their preterm baby against RSV and encouraging those in close contact with the baby to regularly wash their hands, especially before touching the baby, and by cleaning toys, bedding and play areas frequently. They should also prevent anyone smoking near their baby.

Long-term problems

Experts are currently unsure about the long-term effects of preterm birth. Medical advancements have led to more babies surviving longer, especially extremely pre-term babies who are now surviving.



As this has been a relatively recent development, researchers have not yet been able to assess the long-term impact of preterm birth on the lungs.

There has, however, been research into the effect of preterm birth on school-age children, which has shown that children born prematurely have a lower exercise capacity compared with other children their age born at full term, an increased risk of developing allergic asthma, general reduced lung function and more airway obstruction problems.

What is the impact of these health consequences?

When a baby is born prematurely, they will immediately be taken to a special care baby unit (Neonatal Intensive Care Unit), so that a specialised healthcare team can provide individualised care. This can be very distressing for parents as they are separated from their baby so soon after birth, in addition to their baby arriving unexpectedly early.

Parents may be sent home while their baby remains in hospital, or they may be able to return home with their baby and administer oxygen therapy or other treatments from the home. Families caring for a preterm baby often have to face psychological, financial and social costs linked to the long-term health problems of caring for their child.

The effects of preterm birth varies greatly between countries and over the last few decades the survival gap for babies born in high-income countries and babies born in the poorest countries has widened dramatically. Many preterm babies, especially those born before 28 weeks, experience related health problems into their adult life, which can be a great social and financial cost to the individual, their family and society.

What can be done to reduce the impact of problems associated with prematurity?

Follow-up plan of care and aftercare programme

A key area for improvement in care for preterm babies with lung problems is to carry out a structured follow-up plan and aftercare programme for treatment, documenting medical checks and aftercare. This means when one aspect of the child's illness has been dealt with, it is important for that doctor to pass on the relevant history of the baby's illness to the next person to care for the baby. Healthcare professionals should also be able to assist parents at home, through training and education.

Whilst this is done well in some countries, some other health care systems do not have an effective follow-up plan in place.

Monitoring for infections

Another important area for improvement is improving awareness of the risk of lung infections. If an infection is identified early, it is much easier to manage them.

Better support for parents

Parents can often be left feeling helpless when their baby is seriously ill after birth. It is important for them to receive the best information possible and to be signposted to local parent support groups so they can hear experiences from others. If parents and families feel supported they will be better able to manage the potential impact of having a preterm child.

If you are faced with the pressure of caring for a baby who has been born prematurely. You may have many questions and it is important for you to feel supported during this time.

There are parent organisations across Europe, who can provide support networks and information for parents relevant to your country.

The European Foundation for the Care of Newborn Infants (EFCNI) is the first pan-European organisation and interactive network to represent the interests of preterm and newborn infants and their families. It gathers together parents, healthcare professionals and stakeholders from different disciplines with the common goal of improving long-term health of preterm and newborn children by ensuring the best possible prevention, treatment, care and support.

For more information please see http://www.efcni.org/

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The ELF was founded by the European Respiratory Society (ERS), with the aim of bringing together patients, the public and respiratory professionals to positively influence respiratory medicine. The ELF is dedicated to lung health throughout Europe, and draws together the leading European medical experts to provide patient information and raise public awareness about respiratory disease.

This material was compiled with the help of Professor Gunilla Hedlin, Dr. Kajsa Bohlin, Katarina Eglin from Fruehgeborene and experts from the European Foundation for the Care of Newborn Infants (EFCNI).