Looking to the past

The care for newborn and child health comes from the origins of human existence. The paleopathology studies allowed to recognize rickets and hydrocephaly as frequent pathologies. The practice of cranial trepanation started in the Neolithic, as well as the use of the trepanation discs with magical intentions, for protection and transfer of the owner's qualities, or with surgical purposes. The Mesopotamian Civilization was characterized by a general belief in demonology, magic and fortune-telling. The congenital malformations were an irrefutable sign of an evil omen about the wellbeing of the king, the royal family or the country's future. The practice of physiognomy of the newborn was frequent and fundamented the whole prognosis. The Egyptian medical papyrus by Ebers (16th Century a.C.) is the most ancient document known concerning child medicine. Breastfeeding is often represented in Egyptian art. The existence of anthropomorphical vases explains the possibility of the hypothesis of an artificial feeding of the newborn in this civilization. Some medical treatments were administered in specific situations, like poor bladder control and urine retention, diarrhea and cough. In India, the Brahmane writings (app. 500 a.C.) presented the first historical indication of the perinatal medical examination, highlight the importance of child hygiene, and describe several nosologic pictures like epilepsy, smallpox, cholera, malaria, and skin and bowel diseases, among others. In "Corpus Hippocraticum" there are definitions about congenital malformations and dislocations, hydrocephaly, diptheria and several mouth and dentition diseases. The Hippocratic followers, in the treatise "The dentition", present several aphorisms about child health that reveal some actuality. In the book "Aphorisms", there are countless quotations concerning Pediatrics. In the 4th Book of "Epidemics" a picture of abdominal pain after an Onphalocele is described. In the book "Coaca pre-notions" there is a description of a ear infection, and in the book "About places in Man" the description and treatment of hydrops in a child: "in the swelled parts and filled with water, several small cuts should be performed with the bistoury; these should be performed repeatedly over each part of the body; steam baths will be employed, and the cuts shall be continuously covered with a heated medicine". In the treatise of "Joints", a shoulder dislocation is presented: "When the dislocation is congenital, the bone closer to the lesion becomes shorter, which is what happens to those "short-armed"; the forearm loses less, the hand even less, and the shoulder bones lose nothing; the muscles closer to the lesion become more atrophied; the atrophy is more felt in the side opposed to the dislocation and in the
dislocations suffered during growth, less than in congenital dislocations. The deep joint suppurations in newborns are performed mainly on the shoulder, and produce in them the same effects as dislocations”.

The first works concerning child diseases were published in medical literature by Celsus, a Roman encyclopedist, in the 1st century d.C.. In the 2nd century, Sorano of Ephesus (98-117) wrote a book on Gynaecology that included significative number of chapters about the care to newborns and infants, like breastfeeding and child hygiene; about some frequent diseases, and also some important information on orthopaedics. Sorano described for the first time the test of the milk drop over the fingernail as way to check its consistency.

The Hebraic Medicine included records about some neonatal pathologies (anemia, plethora, anal atresia) and the first historical description of hemophilia described in situations of counter indications against circumcision, usually performed on the 8th day after birth.

In the centuries 4th and 5th appeared considerations about hygiene, nutrition and child diseases in Byzantine Civilization and in India.

The Middle Age was characterized by the return to Greek and Roman tradition thanks to conventual, Byzantine and Arab medicines. Essentially since the 4th century d.C., by Christian influence, an assistance act which cared for abandoned children (Milan, 787; Sienna, 832; Pádua, 1000; Montpellier, 1070; Marseille, 1199; Valencia, 1337; Venice, 1383, among others).

The representation of the newborn and of the child in Art became frequent from the 15th century. Since the 15th century, several treatises about child disease have been printed. These works consist globally of the Greek, Roman, Hispanic and Arab medicines, although important personal observations. The 17th century was characterized by the rise of studies on Physiology, microscopy and, and consequently embryology, but also by the description of several clinical entities, like diphtheria, scarlet fever, German measles, measles smallpox and chickenpox.

During the 18th century came the introduction of the anatomical-clinical method. One of the most remarkable protagonists of child medicine was Nils Rosen von Rosenstein, born on 1706, in Gothenbourg, who published in 1764 a 650 page volume, translated in all languages, including detailed descriptions of iron, wood and ivory feeding bottles and the identification of smallpox, rickets, measles, whooping cough and croup. Raulin (1708-1784) mentions glass-made and bottle-shaped feeding bottles for the first time in 1769.

Michel Underwood, member of the Royal College of Physicians of London favoured breastfeeding. He recommended that wheat middlings, rice or bread should be blended into the milk once the dentition was complete.

This physician, influenced by Louis XV of France, tried to bring down child mortality by means of medical assistance and the valorization of hygiene and future mothers. Concerning the last aspect, he condemns the use of tight clothes and the overuse of the pram, and restated the advantages of milk as an ideal food. That century brought greater precision to diagnosis, and the concept of disease replaced that of symptom.

In England, thanks to the impulse of Thomas Coram, an asylum for abandoned children (Foundling Hospital) was created, and later an health care centre for children in need. The organization of such institutions marked the beginning of a systematization of child health care services. During the industrial era, other European physicians and philanthropists stated their concern about children. In France, the protection for children and newborns deserved a particular attention that led the State to recognize its responsibility in the process. The high mortality and morbidity of the mother, the child and the newborn made some countries choose the implementation of outpatient clinics and domiciliary assistance. Also in the same century there was an improvement of the social and cultural conditions, as well as of population hygiene, qualification of medical practitioners and midwives, and also of the techniques and surgical instruments available.

During the early 19th century, the knowledge on child physiology and pathology evolved in three different stages: scholasticism, fantasy-based, and based on clinical examination with the related anatomopathological complement. In the late years of that century, important contributions came from bacteriology, parasitology and chemistry. The drug therapeutics included the medicines coming from alchemy and phytotherapy rudiments.

The first pages of pediatric hospital care include institutions where the children stayed and were assisted on the same location as the existing adult population. In Nuremberg (1331) appeared the first establishment for sheltering pregnant women and orphans, similar to the one later implemented in Paris (1362), hospital Saint-Esprit.
The hospital stay of children brought up serious consequences, psychological as well as concerning morbidity and mortality conditioned by the permanence in hospital and not by the nature of the disease that caused the admittance. A shorter stay time, the creation of an ambulatory hospital and the possibility of letting the mother stay with the child were some of the measures adopted throughout time. Along with the introduction of sulfamides and antibiotics, the above mentioned consequences would be minimized.

Pediatrics as an autonomous specialty took time to be recognized. In France, the progress of Pediatrics occurred during the first half of the 19th century and happened thanks to the clinical practice in the hospitals Hôpital Enfants-Malades and Hospice des Enfants.- Trouvès.

Hutinel defended the reduction of child morbidity and mortality: "the fight against nosocomial infection through the creation of pavilions located on the garden and able to receive a small number of small patients, frequent disinfections, improvement of nutrition through a more criterious regulation of breastfeeding and more extended care to premature and weak babies through the strict application of aseptic and anti-septic measures, isolation of babies carrying transmitting diseases, introduction of child therapeutics, long before the "UV-rays era". Many pages of Modern Pediatrics belong to Robert Debré (1882-1978), who promoted legislating measures concerning medical practice, the fight against child morbimortality and the improvement of the sanitary state of the country. Debré, together with M. Pate and L. Rajchman were the founders of U.N.I.C.E.F. (United Nations International Children Emergency Found).

In the second half of the 19th century, there was a progress of Pediatrics, thanks to the contributions of German and Austrian medicines

The introduction of new methods of diagnosis allowed to extend the investigation on Child medicine. The high neonatal mortality neonatal was a problem that concerned and motivated the society to understand the existing reality and the methods and means necessary to a solution. Pierre Budin (1846-1907) was considered the creator of modern Neonatology, a term that would only be introduced into Medicine in 1963 by Alexander Schaffer. Budin was an obstetrician at the Hospital La Charité in Paris. Together with Stéphane Tarnier (1828-1897), they were both responsible for the organization of the first consultation for infants. Budin spread the use of artificial feeding with sterilized milk, and was the author of the first publication on prematurity (1888). Tarnier idealized the first incubator (1878), later improved by Budin in terms of temperature control, cleaning, hygiene and nutrition of the newborn. This invention was divulged in Europe by Martin Conney, who was also responsible for the creation of the first intensive care unit for newborns. Budin and Marchand recommended the feeding of the newborn through intranasal probe. That technique had been proposed by Henriette (Bruxells, 1853) with a syringe. Tarnier spoke for the maternal breastfeeding and the newborn nutrition through nasal and oral intubation - parenteric nutrition would only appear in the decade of 80's of the 20th century. In 1888 Karl Siegmend Crédé introduced the 2% silver nitrates clinical practice for the prevention of neonatal conjunctivitis. Julius Hesse and Evelyn Lundeen (1922) at the Michael Reese Hospital (Chicago) promoted the minimal manipulation of the newborn, the frequent wash of hands, and the use of specific adequate outfits inside the newborn care unit. The premature newborn was assessed according to his weight and not to his gestational age. The importance of the environmental temperature was recognized, given the newborn inability to maintain his body temperature.

The association of the premature morbimortality to the digestive and respiratory infectious pathology prompted the creation of permanence rooms and special equipment and conduct rules. It was mainly after the 2nd World War that pediatricians devoted themselves to the study of prematurity, with the cooperation of pathologists. The hyaline membrane disease was identified, later recognized by Miller (1949) as an afterbirth clinical situation, and later, as a lung immaturity in the synthesis of lung surfactant (1959).

Breast feeding has been considered the best to feed the baby and when breastfeeding was not available to the babies, donor’s milk was used. With this practice the implementation of human milk banks appeared in Europe since the establishment of the first bank in Vienna, Austria in 1909. The 1930’s and 1940’s saw the introduction of milk banks on a wider scale throughout Europe and since that time the numbers have fluctuated according to the popularity of breastfeeding, the availability of formula milk, financial influences and as a result of the emergence of HIV infection. Actually the European Milk Banking Association (EMBA) promotes milk banking in Europe and encourage international co-operation between the human milk banks of the countries of Europe.
Donor milk has been used with success in preterm infants until their own mother's milk volume is sufficient to meet their needs. It is often used to ensure optimal outcomes all in full term babies and may be a lifesaving therapy for infants and young children with unusual medical clinical conditions. During the 40's decade of the 20th century studies on extra-uterine physiology were pursued using biochemical techniques (Barcroft, Smith), the experimental physiology studies on phoetal lamb, and the identification of retrolental fibroplasty (Ashton, Patz).

Schaffer's work "Diseases of the Newborn" (1960) provides a Picture of Neonatology in de 50's decade, time of the proliferation of breastmilk and of the introduction of phototherapy for the treatment of hyperbilirubinemia (Cremer, 1958). During the following decade, recognizing the possibility of milk being a vehicle for virus contamination, milk banks fell on discredit. The subsidiary means of diagnosis then available were culture exams, blood counts, urine analysis, serum gasimetrries, pathological exams and X-rays. During that period was organized the examination of the newborn and the necessary medical care through the index by Virginia Apgar (1909-1974), also author of the first catheterization of the umbilical artery and the first essays of mechanical respiration.

The 70's decade brought the neonatal intensive care units (1971-1989), featured by a larger number and wider variety of qualified professionals, the institutionalization of behaviour rules, equipment more responding to the clinical requirements, where the positive continuous pressure (Gregory e collab., 1971) was associated to the mechanical respiration in respirators, where microchemical determinations, blood gases and the monitization of pulse, blood pressure and breathing were viable. It was the time of regionalization of management of prenatal healthcare and of the structuration of transportation systems with specialized personnel, among other relevant aspects.

During the decade of 80 was introduced the extracorporeal oxygenation through membrane in situations of reversible total lung failure and of persisting lung hypertension of the newborn. The practice decayed in the following decade, thanks to an early medical treatment, respiration strategies and the use of nitric oxide. That was the time of the introduction of criotherapy to the treatment of premature retinopathy and of the newborn bond to his family (Klaus e Brazelton). Between 1980-1996 occurred the period of clinical essays to assess therapies. That was the era of the surfactant. Although in the 70's it had been shown that the administration of glicocorticoids to the pregnant woman in the first 24 to 48 hours before labour determined the acceleration of phoetal lung maturity, the spread use of this technique took place in the 90's decade, period of the exogenous surfactant (Fujiwara, 1980).

Among many historical aspects that enabled an improvement to assistance, along with the reduction of neonatal mortality, exogenous surfactants deserve a special reference. Their introduction to the treatment of the poor breathing syndrome in preterm newborns was one of the greatest advances of neonatal intensive care. The use of exogenous surfactants on the poor breathing syndrome in newborns was a pharmacological success, thanks to its alveolar stabilization ability.

In the actual state of knowledge, and attending to the principle of evidence-based medicine, the recommendations for the use of surfactants indicate its administration to patients with qualitative or quantitative deficit of the substance. The introduction of exogenous surfactants in daily clinical practice represents therefore an important historical landmark in the reduction of child morbimortality, having neatly separated two pre and post-surfactant eras.

The 90's decade also was important for the high-frequency respiration (oscillometry), permissive hypercapny, ear screening, laser therapy for premature retinopathy and improvement of parenteric nutrition. The prenatal diagnosis reaffirms and acquires an essential importance. The technological advance observed since the decade of 80's with the introduction ultrasonography and computerized tomography, neurosensorial stimulation techniques, of monitoring equipment and, more recently, of eco-Doppler, nuclear magnetic ressonance and the positron emission tomography extended the diagnosis capabilities through the use of non-invasive techniques.

The greatest conquers occurred during the 20th century with the fight against infectious illnesses, the progress of dietetics and the techniques of compensation by perfusion of hydroelectrolithic unbalances, the creation of resuscitation units, the early screening of phoetal distress, the progress of genetics and cytogenetics, the early diagnosis of certain metabolic diseases, the preventive use of vitamin D on rickets, the therapeutic use of insuline, the advances of immunology, allergology, pathology of the hematopoietic system, the use of full blood transfusions for Rh incompatibility and pediatric surgery. In parallel, preventive and social Pediatrics acquire importance towards curative medicine, which determines a total transformation of professional practice.
Another revolutionary breakthrough in perinatal medicine during 20th century was the birth-control Pill (1960). The Pill promised for the first time that women could decide whether and when to have a child, and the timing and spacing of their children.

In spite of the contraception, the voluntary interruption of pregnancy has been adopted and accepted to be legal worldwide, bringing ethical dilemmas to the humankind.

Many other advances in Obstetrics, namely, pregnant women follow-up, transfer in uterus when necessary and birth in the hospital, contributed to the improvement on morbimortality of mothers and babies, through the centuries.

Nowadays there is a clear consciousness of the need to perform structural changes in political, economic and cultural aspects, aiming to an increasing quality and accessibility to prenatal assistance and to the identification of risk factors in order to provide the necessary human resources and materials without losing of sight the constant valuing of affectivity in the development of every child.

**What about the future?**

Many aspects can be speculated in the future of European newborns. In this chapter we will consider some ones. They are well known and well debated in the medical world, but our idea is to give the reader what we think as being the most important in newborn health, knowing that a healthy newborn infant will be a healthy adult.

In Obstetrics, nowadays some new practices start to be used, namely the immersion in water during labour and birth, the natural (no medicalized) delivery and planned home delivery. They need to be evaluated and who knows if they will be the future.

Mothers that want a no medicalized delivery also refuse the vitamin K ministration, ocular drops and vaccines, exposing the newborn to an increased risk of well known diseases. To solve this problem each hospital must establish protocols to be used in the best interest of the baby.

In Neonatology, the Newborn Individualized Developmental Care and Assessment Program (NIDCAP) and Neonatal end-of-life decisions with Palliative care will the future.

**Newborn Individualized Developmental Care and Assessment Program (NIDCAP)**

Important advancements have been made in the care of newborn and preterm infants. Health services have introduced various methods aimed at promoting attachment, breastfeeding, and neurological development. The Kangaroo Mother Care implementation has shown improving physical growth, breastfeeding and has been was well accepted by mothers and nursing staff. It is a practice recommended by the Newborn Individualized Developmental Care and Assessment Program (NIDCAP and used worldwide.

NIDCAP has been developed to stimulate preterm infants at levels adapted to the child's degree of neurological maturity. It is increasingly used. This program was developed by Heidelise Als, Children’s hospital, Boston and, as we can see, implies to care and treat a baby answering to his behaviour during the hospitalization in Neonatal Intensive Care Unit (NICU), individualized care that must be maintained after discharge. It has been shown that newborns in this program show a better neurodevelopmental outcome.

In a recent Canadian study the impact of this program was observed on length of stay of very low birth weight (VLBW) infants and incidence of chronic lung disease, both significantly reduced in NIDCAP group. At 18 months of adjusted age, infants had less disability. Shorter length of hospital stays, less chronic lung disease and neurological handicaps are of great benefit to the family, and have important economic implications.

The theoretical framework behind family-centered, developmentally supportive care is endorsed by research from several scientific fields, including neuroscience, developmental and family psychology, medicine and nursing. However, the introduction of NIDCAP involves a considerable investment at all levels of the organization. It requires some physical changes in the NICU as well as substantial educational efforts and changes in the practice of care. The findings of the presented NIDCAP studies have been encouraging, and NIDCAP has been very well received by nursing staff, neonatologists and parents. It also is attractive from an ethical point of view. It appears reasonable to recommend that
nurseries implement this program and investigate developmentally supportive care in different cultural contexts and with diversified, randomized multicenter trials.

Two concepts that have been recently developed are the Baby Friendly Hospitals and Family Friendly Hospitals. These hospitals have statements, rules and protocols that must be followed.

The Baby-Friendly Hospital Initiative was launched in the 1990s by the World Health organization (WHO) and UNICEF as a global effort with hospitals, health services, and parents to ensure babies are breastfed for the best start in life. After this, great progress has been made, and most countries have breastfeeding authorities or Baby-Friendly Hospital Initiative coordinating groups. It has led to increased rates of exclusive breastfeeding, which are reflected in improved health and survival. WHO will continue to give support this initiative as one essential effort contributing to achievement of the Millennium Development Goals.

We hope that the concept of Family Friendly Hospitals will be the future of new hospitals, being possible to care the baby in a family environment.

The participation of the father during pregnancy and his presence at childbirth, during neonatal period, as well as in childhood and adolescence are very important aspects in the modern family life and very important in the future. It means that to care of the baby, giving food, changing diapers and so on, are sharing by both mother and father, in recent years and must be maintained.

Fathers are probably different, in attitudes, practices and roles, in each family and in each country according different cultures and religions. We must know all these differences to understand European family’s behaviour and develop instruments to improve the father-child relationship. This means that psychologists are and will be fundamental in their lives.

**Neonatal end-of-life decisions and Palliative care**

In spite of the success of Neonatal Intensive Care some babies with severe diseases, did not recover, suffer, and finally die. In meanwhile families suffer also and need to be aware of these situations. This end of life must be followed by the professionals of the NICU.

When death occurs as a consequence of the underlying disease, the goals of care outlined on the reverse are to relieve suffering and not to hasten death.

Clinicians should be extremely sensitive to the difficulties in assessing suffering in critically-ill patients and should be wary of under-treating discomfort when life-sustaining treatment is withheld or withdrawn. Patients with severe brain injury may not experience the typical suffering of pain or dyspnoea, and so they may not require typical sedation or analgesia. If brain death has been formally documented, there is no need for medications to relieve suffering.

Cultural and religious views influence the perspectives of patients and family members regarding life sustaining treatment. These issues should be discussed with patients and family members, and efforts should be taken to accommodate various perspectives. Social workers, spiritual care providers, palliative care consultants, and/or cultural mediators from Interpreter Services are available to help address these issues.

These newborns need palliative care as an alternative. It’s is sure that this practice will be increased in the future. Due to ethical issues Neonatal Euthanasia is not accepted over the world. However in some countries it begins to be adopted.

The practical development of palliative care during the neonatal period is not easy, even though obstetricians and neonatologists have always been aware of the ethical necessity of comfort in the dying newborn. The decision leading to palliative care begins with the recognition of patent or potential unreasonable obstinacy, followed by withdrawing treatment and technical support, and finally a palliative care plan is drawn up with the medical team and the parents.

Palliative care in newborns may take place in the delivery room and then continued either in maternity wards or in the neonatal unit. For babies developing a chronic condition, going home may be advantageous. The population concerned includes babies born with a severe intractable congenital malformation and certain extremely preterm newborn babies at the limits of viability.

Before finish, I would like to mention two recent organizations that have some similar aims and in near future will contribute to the improvement of better practices in care and treatment of the all newborns, wherever they are born.
UENPS (Union of European Neonatal & Perinatal Societies) and EFCNI (European Foundation for the Care of Newborn Infants)

UENPS founded on the 1st July 2006, in Vienna, by proposal of George Simbruner, and registered in Roma, April 17, 2008, is an organisation integrating the national European societies of neonatal and perinatal medicine. It represents countries and governing bodies of each national society, being “the” Society of the European Societies, understood as integration of all societies and not for the single members of the community. Its feeling is to concentrate in a single organization all of the European Neonatal and Perinatal Societies.

The main goals of UENPS are to improve healthcare quality in perinatal and neonatal medicine in the European countries by integrating, coordinating and adding national and scientific society’s efforts, to achieve a common management of the mother and the newborn to accomplish their rights and to provide them the best care independently where they live.

UENPS wants to improve the knowledge of perinatal indicators and to develop recommendations, guidelines, training of the healthcare givers and other tools to achieve the best healthcare for all newborn babies.

To promote exchange information in healthcare, training and scientific UENPS will propose to organize, every two years, in collaboration with the hosting local society the European Congress – Global Neonatology and Perinatology and also give scientific support to local workshops about specific topics according the national societies.

The 1st Congress of UENPS took place in Roma, November 2008, the 2nd and 3rd Congresses will be held respectively in Istanbul (2010) and Porto (2012).

It is an organization with some specificity offering not only scientific activities but helping the European Community about standards of Neonatal and Perinatal Care and rights of the newborns in their countries.

The collaboration in the fields of education, research, guidelines to improve quality in perinatal assistance (better practices) with all European and International Societies of Neonatology and Perinatology is a reality and it will be improved in the future.

EFCNI is an European organisation representing parents and scientific experts with the aim of improving the long-term care of preterm and newborn infants with illnesses and support for their families.

EFCNI, set up in January 2008, seeks to ensure that Europe's largest group of child patients receives the attention it deserves.

EFCNI encourages all those involved or interested in this issue to interact and exchange ideas. It promotes mutual understanding and serves as a platform for the initiation, coordination and integration of all local and national activities involving the care of newborn infants, prevention of preterm delivery, long-term care of preterm infants and support for parents and relatives. EFCNI is particularly keen to establish a link between parents, health professionals and scientists.

The collaboration among health authorities, health professionals, parents associations and all Scientifics societies with the same aims, related to the newborns, their mothers and families’ healthcare, is, and will be, crucial for the future.

Neonatal mortality and morbidity

After the recent scientific and technological advances is treatment and care of pregnant women and newborn infants we have assisted to a decrease on perinatal, neonatal and infant mortality is last century. Nowadays we have more babies alive with no increase on the handicaps.

Perinatal asphyxia in the term newborn infant is now very low and the morbidities seen nowadays are mainly those related with congenital malformations and prematurity.

In the Figure we can appreciate the mortality rates in last decades IN Europe.
In the near future we speculate that the following 10 statements will be accomplished:

- To follow the Declaration of mother’s rights
- To follow the Declaration of the newborn’s rights
- To sensitize the population, politics and professors of the needs of all newborn and every newborn in particular
- To build accurate obstetric departments and NICUs to provide the best treatment and care to mothers and babies, and their families in the hospital and after discharge
- To elaborate Universal medical guidelines for the treatment of the commonest neonatal conditions
- To involve specialized professionals in newborn’s healthcare and education,
- To improve the psychological and social care for parents of babies, in hospital and after discharge
- To increase maternity leave and financial support for parents of preterm and newborn infants with illnesses
- To offer appropriate schooling and educational support for term newborns, developing preterm and newborn infants with illnesses
- To create research funds for studies to improve the treatment, care and neonatal outcomes of newborns with illnesses

In summary; we would like that in the future every newborn could be born, wished by both, mother and father and cared with love. Growing in a functional family and having access to the best education the future newborns will build a new wonderful world.

Our dream, as well as other professional and parent organizations, namely UENPS and EFCNI is to achieve a common management of the mother and the newborn to accomplish their rights and to provide them the best care independently where they are born and live.

This is not the end because…

… O mundo pula e avança como bola colorida entre as mãos de uma criança.
… The world jump and goes on as a coloured ball in the hands of a child.

António Gedeão, Pedra Filosofal 2006
Portuguese writer and poet

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