

## Frontiers in Pediatric Health Care

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### Abstract

Pediatric health care is facing major challenges. It is our responsibility to protect them from a variety of dangers. Endless problems faced by sick children there are still waiting for a solution, despite the most recent acquisitions. Hence a new invention and trends has been generated and developed in areas like genetics, prenatal diagnosis, introducing of new device and drugs, education of caregivers and soon.

**Keywords:** Frontiers; Pediatric; Challenges.

Pediatric health care is facing major challenges. It is our responsibility to protect them from a variety of dangers, including, but not limited to, interruptions during pregnancy, genetic anomalies, perinatal injuries, congenital defects, malnutrition, environmental diseases, infections, poverty, traumas, violence, and exploitation. Endless problems faced by sick children there are still waiting for a solution, despite the most recent acquisitions:

### *Genetic Disorders*

The recent decoding and sequencing of the human genome has expanded the horizon of possibilities in the diagnosis of genetic disorders. Researchers and scientists are now facing the difficulties of identifying strengths and limitations of the genome versus exome sequencing to identify the genetic causes of primary immune-deficiencies, before making the information available for potential clinical applications

### *Pre-Natal Diagnosis*

Substantial progress has been made in the pre-natal epidemiology in order to identify the congenital heart malformations and facilitate the appropriate treatment as early as possible. The traditional focus of neonatal screening for inherited metabolic diseases, which is responsible for significant morbidity and mortality unless treatment is initiated early, is also moving

toward a genetic and mutational scan across the whole fetal genome. Research on the biological mechanisms of fetal programming attracts interest and investigation, and telomere biology could represent the common underlying mechanism connecting fetal programming and subsequent health or susceptibility to complex disorders.

### *Prematurity*

As a consequence of the improvement of pre-natal screening and diagnosis, the recognition of high-risk neonates allowed the referral for delivery in proximity of high level Neonatal Intensive Care Units, with substantial benefits for the neonatal outcomes

### *Neonatal Physiology*

Introduction of three-dimensional cardiac magnetic resonance with phase-contrast imaging, major progress has been achieved in acquiring information on the neonatal physiology of the circulation, with the great advantage that this investigative technique can be performed in neonates without sedation or anesthesia

### *Introducing New Devices and New Drugs*

The research and development of drugs and devices for pediatric patients is complicated due to small patient populations, characteristics of pediatric

physiology and pathophysiology, practical and ethical difficulties in designing pre-clinical and clinical trials. Due to the limitations of pre-marketing pediatric studies, post-marketing surveillance of both drugs and devices safety is compulsory in the pediatric population. Solutions for these issues require collaboration between academia, industry, and government as well as creativity in designing pediatric studies .

#### *Ambulatory Monitoring and Care*

Since there is an evident trend to develop and manage healthcare services, it is vital to prevent errors in pediatric ambulatory care. The mistakes most frequently reported include failures in medical treatment, communication, monitoring, patient identification, and the laboratory. The development of wearable technology for bio-signal monitoring has been recently proved in preterm newborn care, validated by an in-hospital pre-clinical test demonstrating efficiency, reliability, and quality.

#### *Continuity of Treatment from the Pediatric Age through the Transitional Age*

As a result of the advances in medical and surgical treatment during the pediatric age, most patients are now expected to live to adulthood, with a significant increase in the population of adults with congenital defects. Consequently, the transition from a pediatric primary care provider to an adult primary care system has become a critical process in health care management plans, addressing the medical, psychosocial, and educational needs of adolescents and young adults with chronic physical and medical conditions. Useful examples derive from studies of transitional care for children with sickle cell disease and congenital heart defects

#### *Application of Nanotechnologies*

Recent developments of nanotechnology in the field of cardiovascular diseases are emerging as a potential strategy in dealing with the complications and failures of the conventional treatments. Applications of nanotechnology in medicine are already underway, and offer tremendous potential for diagnostics and therapeutic applications. Widely used biocompatible nano-materials and nano-biotechnological tools have been utilized with high efficacy for biomedical application, such as gene therapy, radiological imaging, targeted delivery systems, and vascular implants .

#### *Education and Training of the Care-Givers*

The importance of training non-technical skills is becoming increasingly prominent in the field of enhancing the safety of patients. So far a recognized educational model to support the design of patient safety is lacking, even though a number of theories have been suggested to guide educators in future instructional designs. Further research studies are required to explore which specific aspects of interventions are effective and why, and to assess whether such interventions can impact patient outcomes

#### *Influence of the Life Style of the Parents*

Obesity and the associated and related complications such as diabetes, hypertension, cardiovascular, and respiratory diseases represent the highest risk factor for mortality and morbidity. Childhood obesity, a disturbingly growing problem, is directly related to the number of parent stressors. Parent-perceived stress is correlated to children's fast-food consumption, an important behavioral indicator of obesity risk. Addressing parent stressors and parent-perceived stress is needed in future research in studying the prevention of child obesity

#### *Research Tools in Child Health*

The development and validation of research tools to measure the results of medical and ambulatory care in pediatric patients are progressing. Recent studies have supported the validity of specific questionnaires for assessing the level of youth friendliness of family medicine services for research purposes, though further validations will be required to allow wider use of this tool in the future .

**Cost containment** refers to the strategies developed reduce inefficiencies in the health care system. Inefficiencies can occur in the way health care is used consumers. For example, taking a child to the emergency department for treatment for a cold is inappropriate use. It would be more efficient for the child's cold to be treated at a clinic.

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