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Editorial

10 P Pediatrics: notes for the future

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"As for the future,
your task is not to foresee,
but to enable it"

Antoine de Saint-Exupéry
The Wisdom of the Sands

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In the last few years medicine has been changing radically, almost as a kind of metamorphosis [1].

Technological progress and its applications are not diminishing the role of physicians, but on the contrary represent a formidable instrument for enormously increasing their diagnostic potential. In such a brilliant scenario, all health providers are called upon to keep up to date on the new techniques as they emerge and make possible 10 P medicine, as recently defined: personalized, perspective, predictive, preventive, precise, participatory, patient-centric, psycho-cognitive, postgenomic and public [2]. The final goal of this, which we may call a "manifesto" that illustrates where we would like, or perhaps where we want to go, is to improve the wellbeing of each single patient rather than limiting ourselves to curing their disease. This decalogue of the change applies even more to pediatrics: each of the ten points contains a chapter or, if you prefer, a stage in the change.

Personalized

Each child is different from others, like a single meeting of a single genome with the epigenome. Even identical twins are not identical: they have the same genome, but a different epigenome, acetylome, methylome, phenome and diseasome. If this statement is true, it also derives that the medical protocols now necessary, at least for the time being, do not fit all patients perfectly: they may be too aggressive or too bland depending on individual basal characteristics and/or may not be proper in the course of an acute or chronic disease. The expert and capable physician is judged on the basis of patients who do not respond to protocols, drugs or conventional therapies. The protocols are certainly useful in daily practice, but they cannot substitute for the physician's task, which is to take into account the uniqueness of each patient. The protocols are made to be surpassed, motivating the choices made and demonstrating the clinical reasons for them with each single patient, in our case the baby [3-6]. Treatment is an eminently individual fact.

Perspective

We cannot limit ourselves to examining the state of a disease, but must also consider a child's health and wellbeing. What do we mean by health and wellbeing? What do health and wellbeing mean for that single individual? Health depends on the ability to resist physical, mental and social stress: those who cannot resist or weakly resist stress are fragile; resilient are those who can stand up to it; antifragile are those who resist stress and change, in the sense that they improve. Darwin has taught us in a far-sighted way that the species that survive are not the strongest and not even the most intelligent, but those that are predisposed and ready for change. How can we know, increase, improve and best defend health? We must keep in mind that each of us is in reality an ecosystem in which only one cell out of ten is human. Curing a person tomorrow will mean curing the single individual's entire ecosystem in which he/she is immersed and surrounded by his/her microbioma. Metabolomics and microbiomics will change our future both as patients and health professionals [2, 7, 8].

Predictive

Hippocrates described it all. And we are now in the third millennium.

The metabolome recognizable in a biological fluid at a given time is similar to a barcode: it summarizes an enormous amount of data (big data) which in turn characterize the phenotype of an individual affected by, or at risk of catching, a disease from individuals not affected. If correctly interpreted, this 'metabolic barcode' can also predict clinical outcome [7-9].

Preventive

In the immediate future the need to allocate important resources to the prenatal, neonatal and pediatric periods will be felt more and more: this derives from the fact that most perinatal and pediatric deaths can be prevented and that the prevention of disease in adulthood must begin as early as possible, even in the womb or the first moments after delivery. These are the periods in which preventive measures produce the maximum and most lasting effect and, most likely, at the lowest cost [1].

Precise

Rapid advances in scientific knowledge and technology are powerful drivers for the implementation of individualized therapeutic treatments, in particular with the development of new personalized drugs. Before administering a drug, a urine sample will tell us if it is effective

and nontoxic (green light: I use it); ineffective (red light: I don't use it); effective but toxic (yellow light: I use it with the maximum caution) [10, 11]. Again, it is important to take into account the strong interindividual variability of patients [12].

Participatory

Although surrounded by extremely innovative technologies and immersed in a universe of computer clouds formed by an enormous amount of data, the future pediatrician cannot give up his/her humanistic vocation and lose contact with patients. Humanization, or better, medical humanities, and supertechnology are in reality two sides of the same coin for the future pediatrician [1, 2].

Patient-centric

There is a great difference between medicine focused on the person and that focused on the disease. In recent years we have seen radical changes in the world of medicine and, to describe briefly what has taken place, we can say that observing things through the eyes of the patient appears to be the only possible way to approach the problems of medicine [1, 2].

Psycho-cognitive

Some authors believe that the control room of our organism is represented by the neuro-endo-immune supersystem. We are our brain. We also have a second brain: the intestine. A question of great and increasing interest is the impact of the microbiota on the immune system and on the growth of the structure and function of our brain [1, 2].

Postgenomic

Among the holistic disciplines are the so-called "omics", from the suffix -oma, which in a spreading convention denotes the totality of the word's root. Genomics is what we know best. The other "omics" disciplines, such as transcriptomics, proteomics and metabolomics, picture the complexity of biological systems and are candidates gaining ground on traditional laboratory methods, which are less sensitive and less specific in diagnosing disease. The metabolome is so close to the phenotype as to be considered the phenotype itself: it is thought to be the most predictive phenotype and is able to take into account epigenetic differences. Genomics is "to be able to", transcriptomics is "to start", proteomics is "to do" and metabolomics is "to be". Genetics is printed in ink and cannot be deleted, while epigenetics is written in pencil and can be modified [1, 2, 13]. Genetics proposes while epigenetics provides. We cannot change our past, but we can try to influence or modify our future, for example by changing our eating habits and limiting or personalizing the use of drugs, thus modulating our life styles [1, 2].

Public

I think that this term doesn't need any explanation. Personally, I believe that public health system is and must be the backbone of patient's needs. This is particularly true for pediatrics, and investments in the first 1,000 days of life from conception will transform windows of vulnerability in windows of opportunities, reaching the goal of better outcomes with the lowest amount of money [14].

In conclusion, medicine and pediatrics are moving from 4-6 P to 10 P [15, 16]. In one word, towards the era of individualized medicine [17].

Declaration of interest

The Author declares that there is no conflict of interest.

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