Contradictions and inequities in medical prevention

Together with its unquestionable importance, medical prevention also has several complex aspects leading to multiple contradictions, controversies and criticisms. The desire to avoid diseases was already present thousands of years ago. This was conveyed since the times of the Hippocratic School, which undoubtedly laid the foundations for the establishment of medicine as a discipline whose priority was to prevent illness in persons.

Ancient ethical principles of our profession literally state that one of the aims of medicine is "*to provide health care and relief to those who suffer.*" Health care means to keep people healthy, either 2500 years ago or nowadays, although the scenarios have completely changed and cannot be compared. However, in the past or at present, challenges and questions on prevention persist. In ancient Greece, preventing an illness was uncertain and inconsistent, specially given the scarce medical knowledge and poor living conditions, which extended to almost the 20th century. Historically, prevention measures were ineffective, and those which did work were not available for most of the vulnerable population. As can be seen, even then, as it is now, inequity was present and people with a higher social status had more chances of being healthy. However, several examples can be seen in history that prove that even those with a large fortune or power also got ill and had a short life. One of these examples is Alexander the Great, who was ruling the world and died shortly before turning 33 years old from a disease that lasted only 12 days. It is estimated that life expectancy then was approximately 40 years. At present, life expectancy is almost twice as that, but this does not mean, *per se*, that all present prevention measures are adequate or supported by solid evidence. The slow lengthening of life underwent a dramatic change in the 20th century, mainly due to better sanitation practices, better quality of life, better nutrition, increased economic growth and medical advances in the field of infectious diseases, including the use of vaccines and antibiotics since the discovery of penicillin. This proves that, even nowadays, improving health does not greatly depend on medicine but on all the other measures taken to improve living conditions. In developed countries, life expectancy is longer, not only because of their economic power but mainly because of their higher levels of education and culture, with governments that prioritize their peoples well-being.

How does preventive medicine work?

Prevention and healing are based on very different approaches. The purpose of healing is to get to know diseases, their ethiopathogenesis, symptoms, treatments, etc., while prevention is mainly focused on establishing and reducing risk. As pointed out by Dr. Harvey Fineberg in an excellent recently published paper (*JAMA* 2013;310:85-90): *"Prevention alters the usual order of medical thinking: it generally starts at a demographic-epidemiological level, and then health care professionals transfer the information to the patient care."*

In curative medicine, professional responsibility should exclusively focus on the patient, on an individual, with no other interferences, while in preventive medicine, the entire population or specific groups are included. Solutions offered by curative medicine are individual; physicians treat a person according to his/her own characteristics, which makes that patient different from any other patient. When it comes to prevention, there is a very broad variety of actions and paths to be taken, such as generating changes in people's habits, modifying unfavorable social conditions, implementing preventive measures in relation to risk activities, putting into practice interventions related to prevention with medications and vaccines, among several others.

What are the difficulties, advantages and defects of current preventive medicine?

Multiple hurdles appear in the path of prevention towards its purpose, such as ensuring the effectiveness of a preventive strategy, warranting that it is adequate, and having the risk population adhere to it. Several difficulties emerge when it comes to implementing prevention correctly, such as commercial interests, resistance to changing habits, insufficient dissemination, etc., all of which limit the value of prevention.

Vaccines, which are one of the most important breakthroughs of medicine, are an example of these situations. Thanks to vaccines, severe pediatric diseases disappeared or were drastically reduced, such as diphtheria, polio, smallpox and measles. However, in order for vaccines to work, it is necessary to have children vaccinated. This represents major deficiencies in very-low-income

countries where vaccines are not available for most people of the population. Deficiencies are also present among populations that live far away from urban health care facilities to which they have no access either because they are not able to or because they have insufficient information regarding the importance of being vaccinated. If social security programs are not implemented to provide vaccines in their place of residence, most of these populations will remain unprotected.

In addition, there is a growing trend of parents who do not want to immunize their children and who even proclaim that it is dangerous and that vaccines are not necessary because most diseases at which they are targeted have disappeared. Young parents did not live the times when common diseases could be fatal or result in life-long impairments, as with polio, and assume vaccines are nonsense. This is also the case of measles because some parents believe that the vaccine is a higher risk than developing the disease. Such belief led to multiple problems through the action of parent groups who opposed to have their children vaccinated for measles saying that it increased the risk of autism. It took many years to prove that this was not true, including legal disputes.

The concept that vaccines should not be administered because they are intended for a rare disease or a condition that has disappeared is completely wrong and detrimental. It has been demonstrated that the lack of immunization has resulted in disease outbreaks which have not been observed for decades.

The success of vaccines is almost invisible. It is known that they are effective but nobody "celebrates" when a child is free from an illness because he/she received a vaccine. This is for example the case of pertussis vaccination. The occurrence of multiple outbreaks in adolescents and young adults has enforced the indication of a booster dose at 11 years old. However, adherence has been scarce, either because of parents opposition or negligence, or because physicians were not entirely convinced of its requirement. Outbreaks as the one in California, USA, caused several deaths which could have certainly been prevented.

It should also be pointed out that commercial interests may misrepresent the results of prevention, as in the case of the HPV vaccine and the use of research whose results have not been proven and that generates lots of money. Mammographies are also a clear example. Years ago it was demonstrated that frequent false positive results led to unnecessary tests, including biopsies, and generated strong emotional problems in the affected families. So it was recommended to stop indicating mammographies systematically to all 40-50 year old women and to restrict them exclusively to women at risk. However, recent studies suggest that the situation has not changed and mammographies continue to be indicated massively. The market, together with the consent of physicians enrolled in defensive medicine, is more powerful than evidence which certainly shows that the value of preventive tests depends on the disease risk, their frequency, the ability to adequately detect a disease, and their effectiveness.

Multiple examples suggest that prevention is not always the best or the most adequate option. I would like to mention just one situation in this regard. In the early 1990s, a program to reduce high neonatal mortality was implemented in a very poor country of Africa. Large amount of resources were assigned and distinguished professionals from several countries participated. Over a couple of years, medical measures caused a marked reduction in neonatal mortality, but a subsequent analysis demonstrated that deaths between 30 days and one year of life had significantly increased. The program did not take into account the improvement of the population's living conditions, therefore infants who survived the neonatal period died in the following months.

All the above described helps us to ponder on the difficulties and complexities of prevention measures; however, this should not result in modifying the concept that prevention is undoubtedly the most successful strategy in the health field. We should struggle to allow prevention to develop along the right pathway, without any detours, based on solid evidence on its effectiveness and overseeing interferences and illegitimate purposes, which are present in today's commoditized medicine.■

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