

Foreword

An extraordinary revolution in the Pharmaceutical World took place at the end of last century. Such revolution set out unexpected progress in drug development thanks to innovative and intense research activity, which has been probably promoted by globalization as well.

The consequence of this development led to remarkable outcomes in terms of therapeutical response especially in the treatment of chronic degenerative diseases for which earlier pharmacological therapy proved to be scarcely effective if not palliative.

More recently in the first fifteen years of the this third millennium testing and clinical usage of new drugs have confirmed a positive trend in such pathologies. Moreover they have opened new scenarios for the treatment of many other – also rare – diseases. So far, nine thousand drug-pipelines have been started globally in the various phases. Therefore expectations and hopes are huge both on the patient's side and in the scientific world.

It is worth considering that the power of “drug” has certainly changed social reality having greatly contributed, first of all, to the increase in average life expectancy in industrialized countries.

As a matter of fact, the combination of “drug/life-span” has undergone huge changes in less than one century creating different scenarios.

If in the mid 1990s pharmaceutical products reminded us of the diseases of the “old age”, in the following decades the same products, also thanks to the knowledge that developed various prevention methods, drugs were associated with a status of “adulthood” and consequently included the diseases connected to it.

Nowadays, with the further increase of life expectancy or “senescence” such drugs are sought after to guarantee the quality of life. In such a case a human body, which is essentially healthy in its vital functions, often presents severe weakening caused by devastating diseases such as neuro-degenerative pathologies, and others as well.

Therefore Pharmacology is now called upon to take an active role in such challenge with the development of “innovative drugs” that can delay such pathogenetic damages. It is a promising as well as complex scenario. Pharmacology must tackle a shared definition of “innovative drugs” in a short time. I am talking about drugs that are mostly biological and highly expensive, especially addressed to the treatment of rare diseases and therefore to the preparation of “orphan” drugs.

Tackling the issue of sustainability would therefore be inevitable for the Health Care System of a Country, such as Italy, which mostly provides drugs to patients at taxpayers' expenses.

In short, we can state that innovative drugs are able to give responses at a therapeutic level, but at the same time they have created problems. In the future they will probably create more and more problems at an economic level if a government is

committed to bear the costs of treatment as health provider. Such process becomes more and more complex in the relationship with the patient when, once the patent exclusivity has expired, the drug can be freely produced and put in competition with the original one (brand drug).

As a matter of fact and mostly for economic reasons, both in hospitals and in general health care we have long seen the promotion of similar drugs or generics as substitutes of traditional specialty drugs that are no longer patented. More recently biosimilar drugs, substituting biological drugs (or biotechnological drugs) that are off patent, are available.

The development I am talking about leaves merely commercial issues aside and inevitably unfolds a series of pharmacological and ethical questions, which have long been discussed at various institutional and non institutional levels.

During the recent 37th National Congress (Naples, October 27–30 2015) the *Italian Society of di Pharmacology* (SIF) thoroughly discussed these important issues in the conference titled: “*New Horizons of Pharmacological Research: Ethics and Science*”. These are issues apparently of difficult solution at a mere economic level. Put it briefly, it appears that science with its research and economics with its requirements have to find a balance to guarantee “the right to health” for everybody, especially in terms of access to therapeutic innovation.

As stated above, with the increase in average life expectancy and in the number of old people in good health, we observe a devastating growth in the incidence of chronic degenerative disease, which Pharmacology can potentially deal with.

Health has a cost. By increasing health opportunities, drugs respond to the duly ethical rights of patient’s safeguard on one hand and counter the increase in pharmaceutical expenditure on the other hand, thus creating budget problems in economic terms. Concerning the latter aspect, however, I want to emphasize that in Italy the long bureaucratic and administrative delays have sometimes a negative impact on the availability of innovative drugs. This is incomprehensible in particular when the therapy cost is high.

In my opinion it is worth spending a few words on a related problem: it is still hard for the Health Care System to consider how “good health” can save money which should go to the whole Health Care System instead. Still in my opinion only a medium-long term economic vision can honestly highlight the importance of the prospective support and promotion of research and development of innovative drugs.

In Italy the discussion among experts on this complex issue remains difficult because of huge and different needs of the stakeholders (State Agencies, Scientific Societies and the Pharmaceutical World among others).

In my broad introduction I wanted to focus on a complex scenario, that in perspective is potentially marred by conflict, and I tried to point out its main critical and possible intervention areas. The revolution in the Pharmaceutical World has placed the opposition between “right to health” and economic requirements in the limelight. That is the reason why defining a correct and ethically sustainable position is all the more important in the short term.

As for any complex matter the path to a solution requires a deep discussion, which might include also ethics and law experts. I am not saying anything new: the need for defined regulations is unavoidable in the perspective of standardizing Communities, on national and regional level.

Prof. Carlo Bottari, author of "*Clinical Trials: aspects of substance and application issues*" gives us an important contribution which clearly and in an absolutely brilliant way deals with the above mentioned aspects. His book draws from a high legal profile and pays attention to European and present Italian regulations. It has benefited from the contributions of distinguished experts and its aim is clarifying the most important stages of Drug development with particular attention to Clinical Trials, clinical use of "on-label" and "off-label" drugs, as well as the role of ethical Committees.

In a special part of the book great attention has been dedicated to important legal and ethical remarks on extended and assisted reproduction, which for certain aspects presents problems similar to those concerning access to drug.

My appreciation to Prof. Carlo Bottari for this remarkable contribution is not only based on esteem and the friendship towards a dear friend, but it is mostly felt as the President of the Italian Society of Pharmacology. A special recognition should go to the Jurist and his distinguished collaborators for the extraordinary ability in facing technical and scientific issues with competence and clarity and with the ethical purpose to contribute to the process we all hope can lead to the achievement, through good planning, of a definitive consensus that will not penalize innovative drugs and innovative therapy in Italy.

Let us not forget that drugs are an asset for mankind and should be placed in the highest consideration as a fundamental contribution to people's wellbeing and to the safeguard of a modern Society.

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