

REVIEWS

How Can the Number of Diseased People Be Reduced in General by Implementing One Health Concept (ONE HEALTH WHITE BOOK)

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Abstract

The authors review the important historic moments of the creation of the ONE HEALTH concept and then proceed to elaborate all the main components of the concept, one by one. A final review is made regarding the target of this concept and its objectives that are necessary for the implementation of the concept, both in Romania and abroad.

Keywords: One Health, environment, zoonoses, compared oncology

Rezumat

Autorii trec în revistă momentele istorice importante ale nașterii conceptului ONE HEALTH pentru ca apoi să dezvolte fiecare component principal al conceptului. În final, se face o trecere în revistă a sarcinilor care sunt drept obiective lucrative necesare implementării, în țară și străinătate, a acestui concept.

Cuvinte cheie: One Health, mediu, zoonoze, oncologie comparată

1. THE LIVING ENVIRONMENT LEVEL

From our point of view, *the living environment* refers to the sum total of events that take place around-the-clock in a living area that includes the soil alongside air, and water, including *all living creatures* (plants, animals and humans), plus the *invisible world* that causes diseases in humans and animals, consisting of both *biotic factors* (bacteria, viruses, fungi and parasites) and *abiotic factors* (toxic and oncogenic chemicals).

One Health structure has the mission to carry out *the most amount of work* embodied in the most extensive and fundamental activities alongside two paradigms: ECOPROPHYLLAXIS and ECOTHERAPY of the level called *the living environment*, in order to fulfil, in the long run, the conditions for the realization of life prophylaxis. We can assert without fear of making

mistakes that *the living environment* defines and conditions all the other levels. The living environment is practically that territory - area - in which originate the levels of zoonoses, of comparative oncology, of food safety which will all be reflected in an interdisciplinary mode at the level of human and animal pathology. Therefore, we can speak of a genuine interdependent circle at the level of *the living environment*. All its components are not only in a close relationship but also in a perpetual movement of both abiotic and biotic factors within the biodiversity that includes their vectors as well. The sanitation *the living environment* is an essential condition for talking about a *healthy environment* with *healthy agriculture* that will eventually result in a severe reduction of human, livestock, pet and sylvatic animal diseases.

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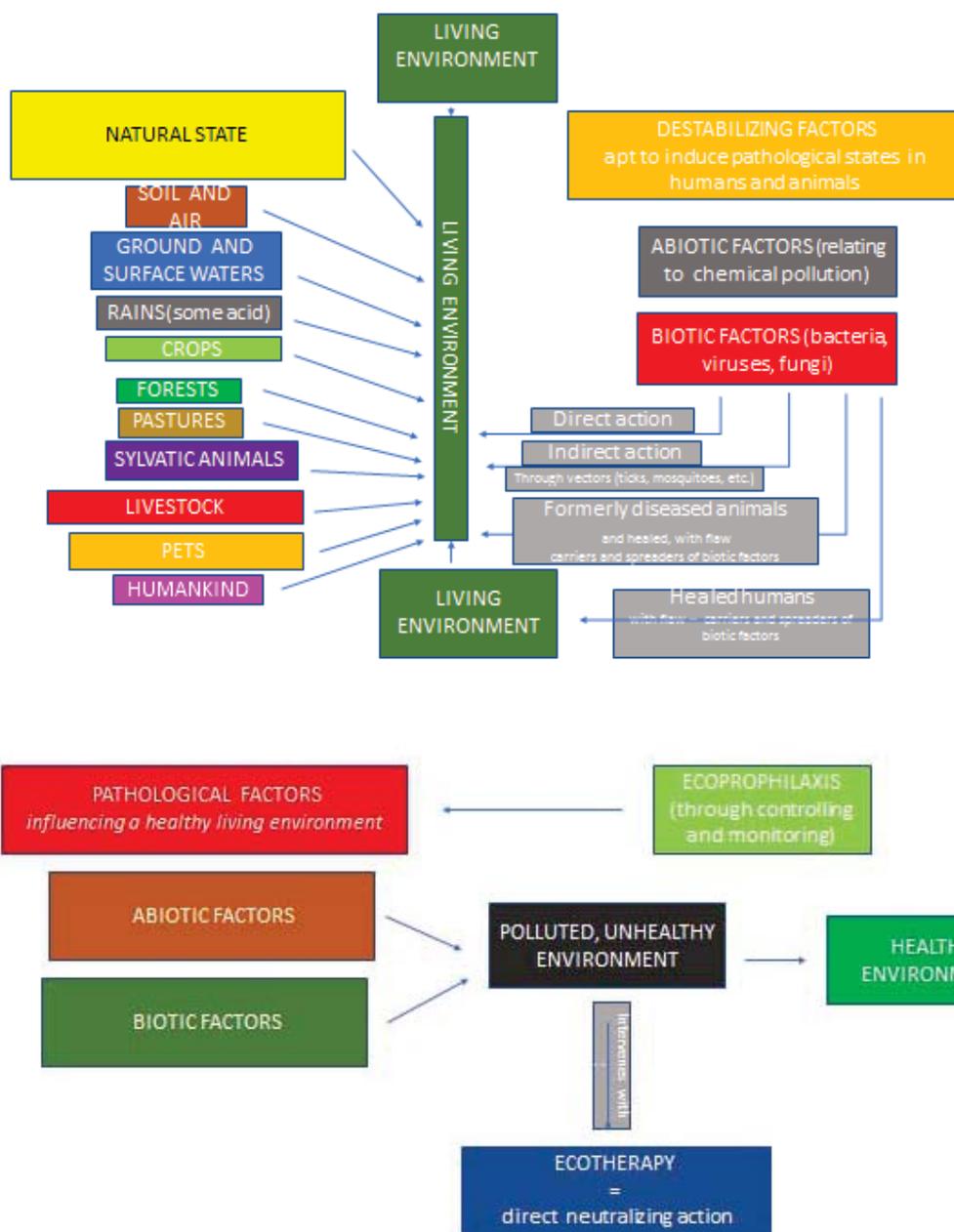
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2. THE HUMAN AND ANIMAL PATHOLOGY LEVEL

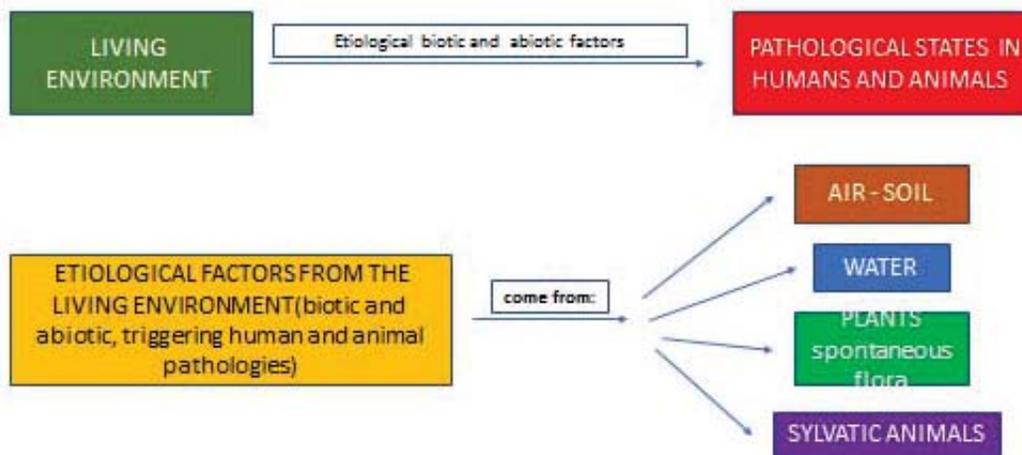
At this level, there are several situations that undoubtedly demonstrate the existence of interdependence among *one health* levels of activity regarding the chapter of *Etiology* of human and animal diseases.

These situations are:

- a) **Human and animal diseases with etiological factors stemming directly from the living environment**

- b) **Human and animal diseases with etiological factors stemming from the living environment, indirectly through vectors**

Within this category, there are a number of serious human and animal diseases caused by vectors in the animal world emerging in a given living area. The number of vectors is impressively high, being correlated with the equally large number of diseases produced by them. This chapter undoubtedly demonstrates the importance of the **comprehensive medical practice** both in human and veterinary medicine by means im-



plementing *one health* concept in its scope. This implementation refers to the fact that any therapeutic element addressed to a human or animal suffering from a vector transmitted disease implies, at the same time, taking measures to destroy the respective vectors in the *living environment*.

Among the vectors mostly involved in human and animal pathology we list:

- A great number of tick species;
- A great number of mosquito species;
- Rodents (mice and rats);
- Pigeons;
- Some aquatic animals species;
- Flies, gadflies;
- Otherstinginginsects, etc.

These vectors transmit to humans and animals a long series of diseases with viral, bacterial and parasitic etiology of great gravity, and, in their turn, each and every sick person or diseased animal can infect these *vectors* which will then infect other humans or animals resulting in a veritable *circle of pathology*.

c) Human illnesses caused by etiological factors originating in the occupational area, a component element of *one health* concept

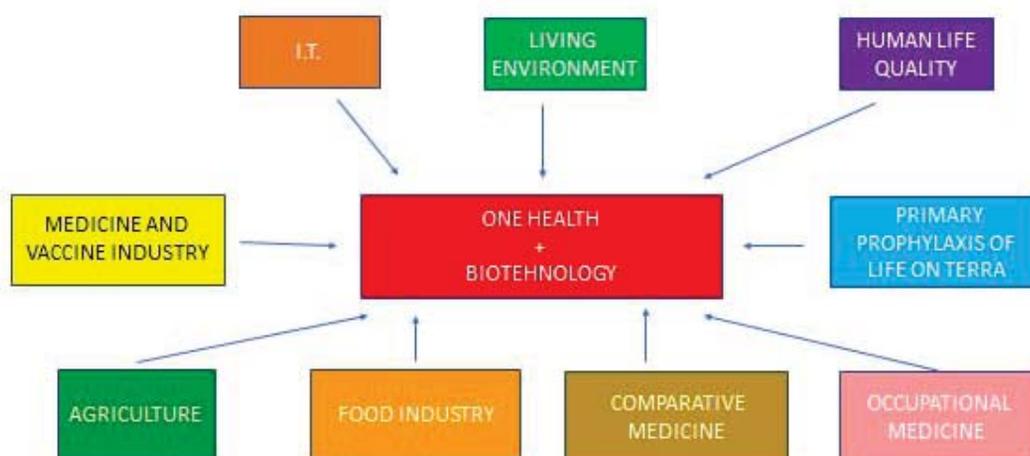
In this context, we consider that we can include a series of illnesses originating either in *the family environment* or in *the daily activity environment*, practically speaking, in everyone’s job.

d) Human illnesses caused by etiological factors originating in the area of nutrition and food

3. THE NUTRITIONAL AND FOOD LEVEL CAUSING DISEASES IN HUMANS NEEDS TO BE ANALYSED SEPARATELY

Foods can be *biotic etiological agents* for a number of *food poisonings* or *abiotic etiological factors* that can trigger *acute toxic conditions* or, through their recurrence, a series of serious chronic diseases. All these possible harmful events are dealt with by *food safety*, which has, generally speaking, a major prophylactic role.

As far as nutrition is concerned, there are a multitude of factors that can interfere with each and every individual’s life. These are to be found at the level of personal income, in religious customs, in family habits, etc. These solitary or cumulative factors can negatively affect one’s personal life leading to the initiation of serious dysmetabolic and debilitating diseases. Taking into account the fact that the so-called nutritional diseases are primarily dysmetabolic, they evince two essential characteristics: *the former* is related to their inception *at a very early age*, and the latter is related to *the accumulation in time* of these dysmetabolic factors that lead to the appearance of serious anatomico-clinical disorders, which, more often than not, once installed, are very difficult to combat. In such cases, not just a few of them, society, by translating into practice *one health concept*, will be able to set up important *prophylactic* actions that will convey substance to *one health* conceptual thesis, namely that it ensures the prophylaxis of life.



4. THE OCCUPATIONAL LEVEL

This level is responsible for quite a number of pathological states in humans, especially those states with a lingering chronic evolution. The occupational level practically includes 2 large areas, the first one represented **the job of each and every member of society**, and the second one by the **family background** of each member of society. Within this framework, we need to analyse all living conditions, including **culinary habits**, traditions, etc. Also, within this level, we need to work closely with the non-conventional therapy area, as a major aid to classical therapies and procedures.

Finally, the last levels we are going to address are: the level of zoonotic diseases, that are common to humans and animals, and the level of comparative oncology that both provides us with information gathered from animal and experimental oncology, and compares them to those known in human oncology.

5. THE LEVEL OF ZONOTIC DISEASES WITH BACTERIAL, VIRAL, PRION OR PARASITIC ETIOLOGY

All these amount to a worrying percentage (about 70-80%) out of all infectious human diseases originating in the animal kingdom. In these circumstances, applying *one-health* concept to all these serious illnesses, whether they be or not under optimal specific therapy, generates a different behaviour on the part of attending doctors who will have to cooperate with veterinarians, on the one hand, and environmental engineers, on the other hand. These new behaviours have, first and foremost, an **epidemiological** and prophylactic role because they will reduce and eventually prevent human illness

by treating diseased animals (or sacrificing them) and applying specific **ECOTHERAPEUTIC** and **ECO-PROFILACTIC** procedures in the living environment.

6. LEVEL OF COMPARATIVE ONCOLOGY

This level is very important from several points of view, namely:

- the historical importance for Romania since *One Health* was born in **2015**, and comparative oncology was established in **1968**;
- the importance of cancer disease in humans and animals cannot be denied because it has a high frequency, incidence and prevalence with an extremely high rate of mortality. From a comparative point of view, cancer in pets is more frequent than in humans, at least by algorithm;
- morphological and clinical manifestations in humans and animals are relatively superposable;
- the existing differences are related to the hierarchy of cancer-affected viscera which recognizes different statistical values for humans and for pets;
- finally, the diagnosis, prognosis and therapy of human cancers versus pet cancer evince most prominent similitudes.

Comparative oncology also has two extremely important functions that can only materialize through the practical implementation of *one health* concept.

These are:

- 1.a the identification of the inco-inducing factors from the living environment, both biotic and abiotic, including their epidemiological risk;

1.b applying a strict manifestation after identifying the high risk onco-inducing factors from the living environment, as well as promoting ECOONCOTHERAPY and ECOONCOPROPHYLLAXIS.

2. **Experimental oncology** is also carried out within comparative oncology. Experimental oncology is practiced on laboratory animals using standardized transplantable tumor strains. Out of all these cases, only very long-lasting cancer strains (slow cancer growth) are used. It goes without saying that the animals receptive towards tumor strain transplantation are very sensitive to the action of various high risk onco-inducing factors. This very property has an important role in defining the limits of onco-induction.

After reviewing all the components of the new one health global medical concept, we can easily un-

derstand the net superiority of a super-professional thinking from a range of different specialists in biodiversity, I.T., bioeconomy and bioengineering, all converging toward a single purpose, namely to ensure the primary prophylaxis of life on earth, to better understand the occurrence and development of various diseases in humans and animals, improving their diagnosis, bettering the prognosis, supporting their therapy and the manufacturing of increasingly sophisticated drugs. Moreover, developing vaccines, the outcome of genetic engineering, and shortening the number of hospitalization days and curability in the evolution of some diseases, will ultimately lead to an improvement of life quality. Many of the above-mentioned facts are the fruit of the exceptional collaboration between *one health* concept and *the locomotive* of scientific research embodied by biotechnology.

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