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From One medicine to one health and systemic approaches to health and well-being

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The history of integrative thinking of human and animal health is briefly reviewed from prehistoric times to the foundation of universities in Europe up to the beginning of comparative medicine at the end of the 19th century. In the 20st century Calvin Schwabe coined the concept of "one medicine". It recognizes that there is no difference of paradigm between human and veterinary medicine and both disciplines can contribute to the development of each other.

Considering a broader approach to health and well-being of societies, the original concept of "one medicine" was extended to "one health" through practical implementation and careful validations in different settings. Given the global health thinking of the last decades, ecosystem approaches to health have emerged. Based on complex ecological thinking that goes beyond humans and animals, these approaches consider inextricable linkages between ecosystems and health, known as "eco-system health". Despite these integrative conceptual and methodological developments, large parts of the human and animal health thinking and actions still remain in distinct disciplinary silos. Evidence for added value of a coherent application of "one health", compared to separated sectorial thinking, is however now growing. Integrative thinking is more and more considered in academic curricula, clinical practice, ministries of health and livestock/agriculture as well as in international organisations. Challenges remain and focus around key questions such as how does "one health" evolve and which are elements of a modern theory of health?

Recognizing close interdependence of humans and animals in their social and ecological context relates closely to human-environmental systems, also called socio-ecological systems. This in turn entails systems theory applied to human and animal health. Examples of successful systems approaches to public health show unexpected results. "Systems biology" focuses mostly on the interplay of proteins and molecules at a sub-cellular level. Analogous to "systems biology", a systems approach to health is an inter- and transdisciplinary study of complex interactions in all health related fields. "Systems health" moves beyond "one health" and "eco-health", expecting to identify emerging properties and determinants of health that may arise from a systemic view ranging from molecules to ecological and socio-cultural systems as well as the comparison with different disease endemicsities and health systems structures.

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