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How to deal with complexities in contemporary medicine: Algorithmic elaboration and etiopathogenetic clusters

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Scientific medical understanding of a nature of human biology has been enriched by new insights into genomic, transcriptomic and proteomic machinery. Molecular data of post-genomic era has brought a new light into physiology of health and disease. Some discoveries have a direct clinical application. A majority of data has a potential - whose role is yet to be tested within integral body reactivity. How to mold the big data into a comprehensive practical perspective in medicine has become a tantalizing challenge. Scientific integration in medicine requires a maximal insight into available data and consensual validation of their role in integral system. These two steps are critical for reliable integration in medicine. They tackle two remote epistemological standpoints, equally relevant for integration, the reductionist analytic simplification and the holistic patient problem at clinical level. They help to interconnect properly a clinical macro-scale reality with molecular/biophysical nano-scale world and to put together both systemic and local body events. Method of matrix based algorithmic workout is usable, practical and efficient tool to bridge basic science-clinical application gap. Graphic symbolic representation outlines positive and negative feedback controls; feed forward mechanisms, as well as, parallel and contextual pathways. Its comprehensibility comes from horizontal, vertical and longitudinal interconnectivity of human body reactivity. The method successfully fuses together variability, redundancy, non-linearity and complexity of disease manifestations. Algorithmic workout opened a new insight in natural networking of etiopathogenetic pathways. Namely, heterogeneous types of diseases tend to group together at certain elements of reactivity. The crossing points of natural reactivity were named the Etiopathogenetic Clusters (EPCs). Etiopathogenetic pathways spontaneously converge to the EPCs, as common units of pathogenesis. 91 EPCs are formed at multiple hierarchy levels and often are working spots of disease therapy. Nosological entities (diseases, disorders) are elements of networks-the heterogeneous processes adjoining to a common EPC.

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