

## Metacrinology

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### Abstract

This meta-thinking communication explores the concept of metacrinology through various prisms. The Greek prefix 'meta' has place of pride in metabolism, metamorphosis, metastasis, and meta-analysis. We now suggest its use as part of metacrinology, to convey the ever-expanding vastness of hormonal anatomy and function, as well as homeostasis and ill-health. Metacrinology can be defined in various ways. The most comprehensive definitions, however, are the study of endocrinology, beyond currently accepted pathways, paradigms, and processes, in an open-minded, evidence-based manner, so as to explore and elucidate newer physical and functional facets of hormonal health and disease.

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### Meta

The Greek 'meta' means 'after', 'beyond', 'with', or 'among'. It is increasingly being used, in English, as an adjective, a noun, and as a prefix. As an adjective, meta describes a person or process that is aware of itself. A meta being would be one who is aware of the nature of his own being. As a proper noun, Meta refers to a popular social communication platform.

It is as a prefix, however, that the word 'meta' has gained maximum currency, 'Meta' implies one step above, one step ahead, or one step beyond what is currently thought or described about the subject being discussed. Metaverse, for example, means 'the universe beyond our imagination', while metaphysics implies 'physics beyond contemporary physics'. It was Aristotle, in fact, who used the word 'Metaphysics' to describe the book that he wrote after his text entitled Physics.<sup>1</sup>

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### Meta in Endocrinology

Endocrinology, too, has used the prefix 'meta' liberally: metabolism, metamorphosis, metastasis, and metanalysis are integral parts of our lexicon.<sup>2</sup>

The word metacrinology is increasingly being heard in casual conversation. Though not a common currency as of now, we feel that its use will increase in the foreseeable future. We suggest various definitions of metacrinology (Box) that may inform its usage. These definitions convey the dynamic, evolving, and inclusive nature of our chosen discipline. All these definitions have a sound scientific basis, are self-explanatory, and stand up to the "standards" of metacrinology.

A single definition, which covers the entire spectrum of meta endocrine knowledge, is required, however. This should be robust enough to include not only contemporary knowledge, but future discoveries as well. We therefore suggest that metacrinology be defined as the study of endocrinology, beyond currently accepted pathways, paradigms, and processes, in an open-minded, evidence-based manner, so as to explore and elucidate newer physical and functional facets of hormonal health and disease.

This definition encompasses recent and ongoing physiology, pathology, and pharmacotherapeutics. It also sets a science-based stage for encouraging research in 'meta' domains such as non-traditional gland systems, multidisciplinary endocrinology and psychological, social and spiritual aspects of hormonal homeostasis. Discussion and debate about the scope and spectrum of metacrinology must be encouraged by empowering all stakeholders to voice their views without fear of sarcasm or stigmatization. "Meta" queries should be answered, and doubts dispelled, by using appropriate research methodology

### Metacrine Prescriptions

We may also borrow the gaming acronym META (most effective tactics available) to describe a META 5 (most effective treatment available/accessible/affordable/appropriate/advised) prescription. Ideally a META 5 prescription should tick all five As. In certain situations, however, a physician may write a META 3 (available, affordable, advised) prescription.

**Box:** Definition of Metacrinology .

Definition	Relevance/rationale
The integrated science of metabolism and endocrinology	Metabolism and endocrinology are increasingly being viewed as a unified subject, because of the diabetes and obesity pandemics
Advanced knowledge of endocrinology, beyond classical glands	Newer glands & hormones are being discovered e.g., liver, heart, kidney, skin
Advanced knowledge of endocrinology, beyond classical gland- receptor connections and feedback	Newer 'hormonoids' and transmitters are being recognized, e.g., minerals, vitamins, drugs
Quantum endocrinology or Einsteinian endocrinology, as opposed to Newtonian endocrinology	Multifactorial, multifaceted diseases such as obesity cannot be explained by linear mechanisms
Spiritual endocrinology	The 'spiritual' or 'metabiological' functions of various hormones are being elucidated
Expanded usage of endocrine conditions in disease states and syndromes	Usage of terms such as barocrinology, hepatocrinology, cardio-reno-metabolic (CRM) syndrome and adiposity- based chronic disease (ABCD)
The study of endocrinology, beyond currently accepted pathways, processes and paradigms	Newer skills are required to surmount newer challenges

**Table-1:** Domains of Metacrinology.

## Person-centered ecosystem (Environment)

- People –centred systems of care
- Newer discoveries
  - Glands and hormones
  - Target organ and receptors
- Common pathways
  - Causation of disease
  - Correction of disease

## Higher (metaphysical) aspects of being

- Psychological
- Spiritual

## Holistic prescription

- Value added therapy
- Comprehensive therapy

A metacrine prescription is one that includes value-added therapy (VAT) in addition to purely endocrinotropic medication. VAT is the term given to the education, counselling and support that accompanies pharmacological therapy of diabetes or other chronic conditions.<sup>3</sup> It can also be used to refer to psychotropic medication and risk reduction strategies.

Risk reduction can be achieved by non-endocrine medicines like aspirin, "nonclassical" endocrinotropic drugs such as renin angiotensin aldosterone system (RAAS) blockers or mineralocorticoid receptor antagonists (MRA) (finerenone), and "classic" endocrine medication, glucagon-like peptide 1 receptor agonists (GLP1RA) and sodium glucose co-transporter 2 inhibitors (SGLT2i).<sup>4</sup>

Such additions have already become standard of care, and have contributed to the strengthening of endocrinology as a preventative as well as curative science.

**The Meta-Future**

Advances in endocrine diagnostics have allowed the detection of hormones at lower concentrations as well.<sup>5</sup> This helps in mapping various physiological processes, actions, and feedback mechanisms. Modern communication systems have also facilitated interaction between basic and clinical endocrinologists and their peers in other disciplines as well. This obviates the need for physical proximity during ideation and research, and allow a 'meta' growth engine for science. Metacrinology therefore, will bloom, bear fruit, and benefit us all.

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