

THE LAWS OF MEDICINE: FIELD NOTES FROM AN UNCERTAIN SCIENCE

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Siddhartha Mukherjee, a renowned professor and researcher at Columbia University in New York, offers reflections in his book *The Laws of Medicine: Field Notes From an Uncertain Science* (Editora Alaúde, 2019) as part of the TED collection. A specialist in the field of oncology, his laboratory's mission is to discover innovative medications for cancer treatment. His career includes the authorship of the non-fiction book *The Emperor of All Maladies* (Editora Companhia das Letras, 2012), for which he won the Pulitzer Prize in 2011, one of the most prestigious awards, as well as publishing studies in important medical journals.

In *The Laws of Medicine: Field Notes From an Uncertain Science*, Mukherjee proposes the idea that medicine, as a science, would need to have laws, pointing out that science with immutable laws is very common in physics and mathematics but less so in chemistry, and rare in biology. From reading the book *The Youngest Science: Notes From a Medicine-Watcher*, written by fellow doctor Lewis Thomas, who describes his internship and residency period in the 1930s as a student at Harvard Medical School.

Reflecting on the evolution of medicine, especially clinical medicine in recent years, Mukherjee adds what he considers to be the laws of medicine. Initially, he recognizes that his book deals with information, imperfections, and uncertainties. Furthermore, the author problematizes that around 25 years ago, when he reached the fourth year of medical school, he had acquired enormous knowledge, but reflects that he lacked the knowledge of what to do with it, which is now just a click away from the computer. Mukherjee considers that the challenge is even greater when this knowledge is accompanied by imperfect, incomplete, and uncertain data.

Based on properly worked, historically situated, relevant, and paraphrased clinical cases to ensure the anonymity of patients and allow the au-

thor's rhetorical freedom, as well as an elaborate use of clinical medicine, genetics, and especially epidemiology, the author draws attention to what he considers the key to the problem when announcing the laws: the reconciliation between knowledge (certain, fixed, perfect, concrete) and clinical wisdom (uncertain, fluid, imperfect, abstract).

For Mukherjee, the three laws that govern medicine include: 1) a strong intuition is much more powerful than a weak examination; 2) the normal ones teach us rules, the "outliers" teach us laws; and 3) for every perfect medical experiment, exists a perfect human bias. With his robust background in oncology, it is natural that he draws his attention to the genetic and molecular aspects of patients' problems. However, this does not prevent him from having a keen eye on the world around the patient.

The author ends his narrative by declaring that medicine is not limited by only three rules. With a peculiar, easy-to-understand but rigorous erudition, the author quotes Voltaire when referring to doctors: "They are men who prescribe medicines about which they know little, to cure diseases about which they know even less, in human beings about whom they know nothing." Mukherjee concludes by stating that the "youngest science is also the most human science", therefore a science of great complexity.