

## HUMANITIES | MEDICINE AND SOCIETY

# The new medical model: a renewed challenge for biomedicine

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Over the past 25 years, several new “medicines” have come screeching onto health care’s various platforms, including narrative medicine, personalized medicine, precision medicine and person-centred medicine. Philosopher Miriam Solomon calls the first three of these movements different “ways of knowing” or “methods,” and argues that they are each a response to shortcomings of methods that came before them.<sup>1</sup> They should also be understood as reactions to the current dominant model of medicine. In this article, I will describe our dominant model, which I call “the new medical model.”<sup>2</sup> I will argue that several towering problems in modern medicine can be traced to its philosophical foundations, which calls for philosophical analysis.

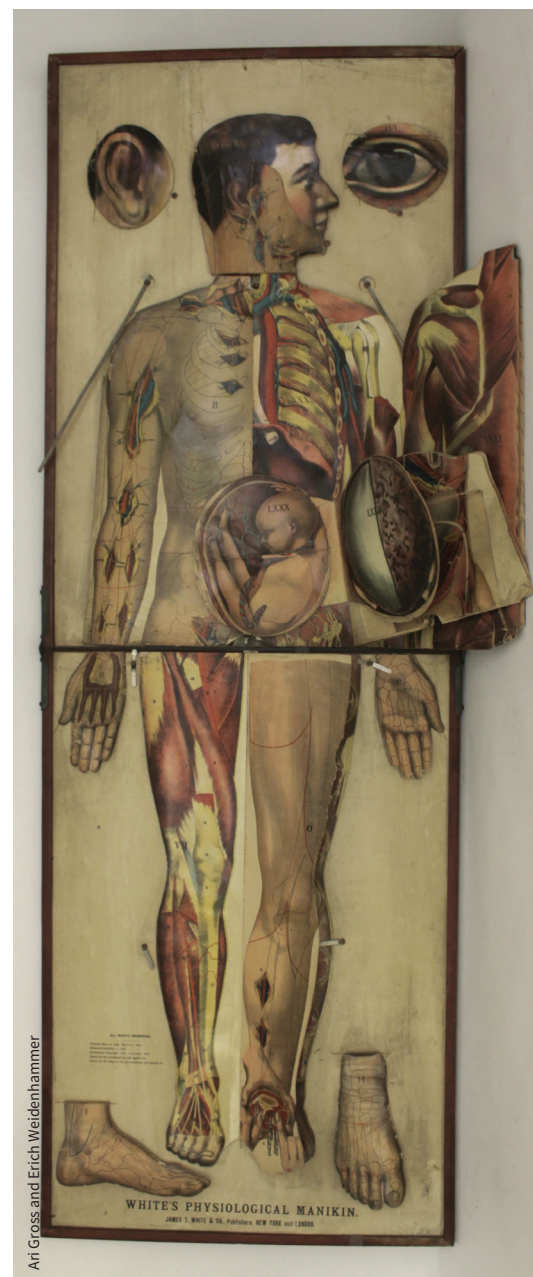
Forty years ago in his article “The Need for a New Medical Model: A Challenge for Biomedicine,”<sup>3</sup> psychiatrist Dr. George Engel wrote: “The dominant model of disease today is biomedical.” Engel argued that the “biomedical model” or “biomedicine” was the traditional model of disease as well as the orthodox model of medical practice. This model conceptualized disease as deviation from normal biological functioning owing to biological determinants, described in the language of the basic biomedical sciences, including anatomy, physiology and molecular biology.

The biomedical model directed the physician to correct disease and restore normal functioning. How so? By using knowledge from these very sciences. Because of the perceived “reductionism” and neglect of the psychological and the social among the components of the model, the biomedical model has since been a target of incisive criticisms, many of which have been advanced by scholars in the humanities and social sciences, including philosophers.<sup>4</sup>

Although biomedicine is sometimes called “the medical model,” I will refer to it as the “old medical model” for reasons I will explain shortly. We can identify at least three essential components of the old medical model as described by Engel: a disease concept, an ethic and a logic. Its disease concept is disease-as-bodily-biological-dysfunction. Its ethic or ethical imperative is to cure the disease, fix the dysfunction. Finally, its logic or “style of scientific reasoning”<sup>5</sup> consists of biomedical “mechanistic reasoning,” reasoning through biomedical mechanisms of health and disease. In summary, the kind of medicine modelled by the old medical model is one in which physicians cure biological disease using biomedical mechanistic reasoning. The paradigmatic diseases for the old model are acute infectious diseases, which are generally curable, and can be understood and treated using biologic rationale: for a bacterial infection, treat with an antibiotic to halt the germ’s growth or survival, and thus clear the infection.

By the time Engel wrote his “challenge to biomedicine,” health care was already being transformed by two major developments: the rise of chronic diseases and evidence-based medicine. Chronic diseases defy the old medical model because they are generally incurable, and many patients with chronic disease have not one disease but multiple distinct diseases (multimorbidity). Meanwhile, evidence-based medicine defies the old model by privileging reasoning from the results of clinical epidemiologic studies rather than mechanistic reasoning.

In response to these new clinical realities, the old medical model has evolved into the “new medical model,” which represents the cure, prevention and management of biological disease(s) using the reasoning and principles of evidence-based



A photograph of *Physiological Manikin* (life-size anatomy atlas), by James T. White, circa 1895. Archived at the University of Toronto Scientific Instruments Collection, Toronto, Ontario.

medicine.<sup>2</sup> The new medical model's disease concept may be unchanged compared with the old model (the "concept of disease" debate in the philosophy of medicine is lively and ongoing<sup>6</sup>). However, the new model's ethic is expanded to accommodate the prevention and management of incurable chronic disease and multimorbidity, and its logic is the logic of evidence-based medicine.

The new medical model is enshrined in clinical guideline-directed care because guidelines are typically disease-specific and evidence-based. For instance, the guideline-driven care of a patient with type 2 diabetes and heart failure would have the physician manage these biological disturbances (in glucose homeostasis, in cardiac function) individually while preventing other diseases or complications through interventions supported by evidence from clinical research, especially clinical trials.

The new medical model was not quite what Engel had in mind when he announced the need for a new model in the title of his seminal essay.<sup>3</sup> The new medical model blends the old with the new, inheriting many of the advantages and disadvantages of the old model, while creating new problems for medicine. These problems include reductionistic and fractured care, as well as the challenges of generalizing and applying study results. These practical problems are entangled with philosophical problems, problems concerning the metaphysics or nature of chronic disease and multimorbidity, the ethical ends of medicine and the epistemology or logic of evidence-based medicine. Philosophers can be of service here by disentangling the philosophical from the practical problems and contributing toward unraveling both.

In the philosophy of medicine, reductionism can be understood as a strategy in which clinical symptoms or outcomes are explained with respect to parts of the patient (organs, cells, molecules).<sup>7</sup> Similarly, in medicine, patient care is often described as reductionistic when it is oriented toward or organized around body parts instead of treating the whole patient in their life context. Together, the new medical model's disease concept and its disease-centred ethic promote reductionism, because diseases are understood with reference to the body's component parts,

and the goal is to cure, prevent or manage the disease. When patients have multimorbidity, care can further become fractured or fragmented under the new model — with increased risk of treatment conflicts — because multimorbidity is managed by treating each of its constituent diseases.

Philosophers of medicine can lend insight into these problems by investigating our concept of disease,<sup>6</sup> the nature of chronic disease and comorbidity/multimorbidity,<sup>8</sup> and explanatory strategies in medicine.<sup>7</sup> For example, given the importance of psychological and social factors in the prevention and management of chronic maladies, it is worthwhile exploring whether chronic diseases and their pathogenesis are best understood — and even best defined — at psychological and social levels in addition to biological levels. However, how can we define multilevel chronic diseases and pathogenesis in a substantive way that facilitates effective prevention and management and goes beyond simply listing social determinants?<sup>2</sup> Likewise, because fractured care is so problematic, it is worth exploring whether comorbidities are truly distinct/discrete entities,<sup>2,8</sup> and how we might better represent and classify complex morbidity in a more integrative way for patients who currently receive multiple chronic disease diagnoses.

Meanwhile, the challenges of generalizing and applying study results arise because of the evidence-based logic of the new medical model, in which physicians make diagnostic, prognostic and therapeutic predictions based on clinical epidemiologic evidence. Generalizing study results and applying them to particular patients are inferences and, like all scientific inferences, they rely upon assumptions.<sup>9</sup> Unfortunately, the inferences and their assumptions are poorly articulated in medicine and rarely acknowledged. Medical commentators often worry that explanatory randomized trials have poor generalizability and average study results apply poorly to particular patients, if at all. Philosophers of science investigate such concerns by rationally reconstructing the underlying inferences, exposing and examining their assumptions, and by developing alternate methods for sound prediction.<sup>9,10</sup>

The practical challenges I described (reductionistic/fractured care, generalizing/

applying study results) are not inevitable challenges for medicine, because they arise owing to the concepts, ethics and logic of a particular model of practice (the new medical model). Various recent movements in medicine seek to remedy the model's shortcomings. Narrative medicine and person-centred medicine reject the model's disease-centred ethic. Personalized medicine and precision medicine focus on its logic and aim to improve individualized prediction. Engel's own strategy was to reject the medical model's disease concept and propose a biopsychosocial model<sup>3</sup> in which disease is conceptualized in terms of the psychological and social in addition to the biological.

In summary, the new medical model represents the evolution of biomedicine in response to the rise of chronic diseases and evidence-based medicine, and it embodies a philosophy of care on a grand scale. Rising to the new challenges that it poses will require both medical and philosophical wisdom.<sup>2</sup>

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