

Form Follows Function: A Functional Medicine Overview

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Editor's note: This Commentary is a companion to *Refractory Depression, Fatigue, Irritable Bowel Syndrome, and Chronic Pain: A Functional Medicine Case Report* on page 104 (available at: www.thepermanentejournal.org/issues/2016/fall/6239-ibs.html). Also note that material describing the foundation and practice of Functional Medicine has been excerpted, with permission, from *Introduction to Functional Medicine* by David S Jones and Sheila Quinn, ©The Institute for Functional Medicine, 2016.

In this issue, Plotnikoff¹ presents a case report using an innovative systems-biology approach known as Functional Medicine to improve the overall health status of a 72-year-old man with multiple complex, chronic, comorbid conditions. Expensive technology was not required, and treatment focused on the correction of common physiologic imbalances, along with lifestyle modifications in diet and nutrition. It is noteworthy that this relatively low-cost intervention was able to reverse long-term symptoms and diseases, while decreasing utilization of health services. This case highlights a significant opportunity to move the focus of care toward root cause analysis, which, when combined with the power of lifestyle modification, can help to bend the cost curve and improve the value of care.

In 2010, 86% of all health care spending was for people with one or more chronic medical conditions.² In 2014, national health expenditures grew to \$3.0 trillion or \$9523 per person, and accounted for 17.5% of gross domestic product.³ If we do not adopt new approaches by 2022, annual health care costs in the US will rise to more than 20% of gross domestic product,⁴ making the cost of care in our current care model economically unsustainable. The current focus in health policy is on

value-based care, which can be thought of simply as outcomes divided by cost.⁵ One would like to think that increased costs produce improved outcomes, but this is not the case. The US spends 1.5 times to 2 times more per person on health care than other industrialized countries (per Organization for Economic Cooperation and Development),⁶ but falls last in most categories of health outcomes, including infant mortality, percentage with multiple chronic diseases, and life expectancy.⁷

Our current health care model fails to address the causes of and the solutions for chronic disease. We segregate lifestyle medicine from clinical care and fail to recognize the urgent need for a continuum-of-care model that reverses illness, promotes health, and optimizes function. This type of transformation requires a perspective different from what is currently present in our costly health care system.⁸ Randomized controlled trials comparing Functional Medicine, a systems-biology approach, with the current standard of care are underway at the Cleveland Clinic, along with unique approaches to measure global patient outcomes (with National Institute of Health's PROMIS [Patient-Reported Outcomes Measurement Information System] measures) and total cost of care (with insurers' claims-based data).

Functional Medicine provides a new operating system for 21st-century medicine.⁹ This transformation will require us to validate appropriate clinical models and support clinical practices with tools and compensation to promote behavior change, especially in nutrition. According to the Milken Institute,⁴ opportunities for improving value within our health care system can be found in many areas: behavioral changes, innovations in technology, improved delivery of services and communication, health education, and wellness programs.

The Gordian knot of chronic disease will be solved by shifting our focus from suppression and management of symptoms to addressing their underlying causes. Specifically, we must integrate what we know about human biochemistry, physiology, and behavior change with scientific, personalized care that addresses the causes of complex, chronic disease—which are rooted in modifiable lifestyle choices, environmental exposures, and gene expression. This fundamental principle has fostered rapidly growing interest in Functional Medicine.

Definition: Functional Medicine is a systems-biology-based model that empowers patients and practitioners to work together to achieve the highest expression of health by addressing the underlying causes of disease. Functional Medicine uses a unique operating system and personalized therapeutic interventions to support individuals in achieving optimal wellness.

Functional Medicine can be described as the clinical application of systems biology. Chronic disease is usually preceded by a decline in function of the body's systems. Functional Medicine sees health and illness along a continuum that changes over time as we interact with our environment. Additionally, Functional Medicine improves patient health by helping clinicians to identify and reverse dysfunction in biochemistry, physiology, and behavior.

Each patient represents a unique, complex set of inter-related environmental and lifestyle influences on function (including genetic vulnerabilities). These factors create opportunities for health maintenance or disease progression. Lifestyle choices and environmental exposures can push us toward (or away from) disease by turning on—or off—certain genes. This, in turn,

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may impair certain biological functions: assimilation, defense and repair, energy production, biotransformation, communication, transport, and structural integrity—the seven core clinical imbalances.

To assist clinicians in understanding and applying Functional Medicine, The Institute for Functional Medicine⁹ has created a highly innovative way of representing the patient's signs, symptoms, and common pathways of disease. Organizing the seven biological systems and clinical imbalances into the Functional Medicine Matrix Model creates an intellectual bridge between the basic science literature on physiologic mechanisms of disease and the relevance of clinical applications. Functional Medicine posits that, with scientific rigor, clinical wisdom, and innovative tools, we can identify many of the underlying drivers (both triggers and mediators) of chronic disease, allowing us to reverse these clinical imbalances, often before overt disease is present.

In Plotnikoff's case study,¹ overt disease is already present. Through the lens of Functional Medicine, the author is able to identify underlying drivers of dysfunction—recognizing pancreatic insufficiency and alterations in the microbiome; nutritional depletion, with need for methyl support and omega-3 fats; and severe oxidative stress. These imbalances in assimilation, energy production, and nutrition are activators of overall imbalance, manifesting as symptoms and multiple comorbidities. In this case, one expression of disease may arise from the interconnection of multiple clinical imbalances, whereas one clinical imbalance may be the root cause of multiple, seemingly different conditions. An essential precept in Functional Medicine is that restoring balance—in the patient's environmental inputs and in the body's fundamental physiologic processes—is the key to restoring health.⁹ As John F Kennedy stated, "A rising tide lifts all the boats."¹⁰

Functional Medicine treatment usually involves a broad array of therapies, from dietary interventions and lifestyle changes to high-quality nutraceuticals and targeted pharmaceuticals. The hierarchy

of approach moves from fundamental lifestyle and nutritional interventions to a prioritization of the aforementioned clinical imbalances, then iterative follow-up of symptoms and assessment of patient-reported outcomes measures. Ultimately, we find that when patients embrace these foundational principles, they have improvement in function and decreased health care utilization. The bottom line for patients is to achieve outcomes that encompass the entire continuum of care—especially the health status achieved, including survival, functional status, and quality of life.¹¹

The Functional Medicine approach is done within the context of a therapeutic relationship. The role of connection, deep listening, reflection, presence, humility, vulnerability, trust, and gratitude are essential for healing to occur.¹² The skills to assess a patient's readiness to change and provide appropriate coaching are as important as understanding the underlying clinical imbalances and treating with the correct therapies.

Functional Medicine practice highlights these four essential components

1. Listening to the patient's illness narrative on the initial intake
2. Evaluating, prioritizing, and focusing on the patient's modifiable lifestyle factors
3. Organizing the patient's clinical imbalances by underlying causes into a systems biology matrix framework; and
4. Creating a therapeutic partnership between doctor and patient.

Functional Medicine is relevant to all health care disciplines and specialties, all of which can apply this approach using the Functional Medicine Matrix Model as a template for organizing data and uncovering new understanding. The Functional Medicine operating system and approach build a cross-disciplinary model and provide effective clinical tools to prevent, treat, and reverse complex chronic disease. As we move from Case Reports to randomized controlled trials and population-based trials, Functional Medicine research will offer insight into the best ways to improve the value of the care we offer. ❖

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

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