Nutrition Education in 2040—An Imagined Retrospective

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"If all primary care physicians are expected to address obesity, nutrition, and physical activity with their adult patients, training programs need to change."[1] This statement, from an article by Smith et al[1] in this issue of the *Journal of Graduate Medical Education*, is based on a survey of 219 senior medical residents in Ohio, all of whom were about to begin a career in family medicine, internal medicine, or obstetrics and gynecology. The article provides a snapshot of how prepared the current US primary care workforce is to address the current epidemics of obesity, diabetes, and other lifestyle-related chronic diseases. Smith et al[1] conclude that newly minted primary care practitioners score poorly with regard to knowledge about obesity risks and how to effectively counsel patients regarding nutrition, weight management, and physical activity. Senior primary care residents' scores attesting to perceived professional competencies in these key areas are just shy of abysmal, and the group perceives that its members are not prepared to counsel their future patients about these topics.

More important, these newly credentialed physicians recognize this gap in their training and want those in charge (including their educators and mentors as well as those who oversee medical education and the nation's health care systems) to change the status quo. Today's primary care trainees are well aware of the risks of obesity and its physiological, psychological, and economic consequences to patients and the nation's future.

What if a principal driver to change the current approach to lifestyle-related chronic illness was purely financial? When our current medical care reimbursement system shifts from a predominantly fee-for-service model, which provides financial incentives for more diagnostic and therapeutic interventions, to a predominantly capitated model, which rewards physicians, allied health professionals, hospitals, health systems, and third-party payers for keeping people well, the engines of change will be ignited. In a pay-for-performance model, a radical realignment of financial incentives—to keep people healthy and out of hospitals—makes it imperative that primary care physicians possess the skills to advise patients about obesity, nutrition, physical activity, and other behavioral changes. In this system, primary care physicians need to be experts in both disease and wellness, in both pathogenesis and salutogenesis.

What if the goals of primary care providers, a quarter century from now, went beyond detecting, treating, and managing diseases? These expanded goals could include assessing a patient's current situation, informed by the patient's personal preferences, as well as technology and increasingly precise genetic data, to thoughtfully advise patients about individualized lifestyle-related choices, such as diet, exercise, and stress management strategies. Counseling in these areas will contribute to enhancing patients' future function and longevity. Twenty-five years from now, today's graduating primary care residents will be in their fifties. What might their health promotion checklists look like?

Let us imagine that by 2040, leaders from the government, the corporate sector, the military, the Department of Veterans Affairs, information technology, public health, and medicine have collectively decided, out of shared responsibility and necessity, to partner with their counterparts in the food industry, including the US Department of Agriculture, restaurant associations, supermarkets, farming collectives, community-supported agriculture associations, environmental groups, celebrity chefs, and cooking schools, to form a united front to improve nutrition behaviors and health as a society. Let us imagine how primary care residents would be optimally trained in that futuristic version of "United States 2.0."

An imagined "Health System of the Future" was sketched out in a recent article in *Academic Medicine* by Eisenberg and Burgess.[2] In that model, the bedrock elements of research and of primary, secondary, and tertiary care remain, but by 2040 these elements would be supplemented by epigenetics-informed "Exercise and Movement Therapy Centers"; "Teaching Kitchens" for instruction in food selection, preparation, and enjoyment; and "Mindfulness/Mental Health Centers" intended to decrease perceived

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stress in an increasingly overstimulated, technology-driven world.

By 2040, medical and allied health schools will require standardized competency examinations with patients, which will test factual knowledge, advisory, and communication skills in nutrition, physical activity, stress management, and sleep hygiene. Competence in these areas will be prerequisites for professional certification. Just as we now require that all medical graduates know how to assess and manage a patient with acute, crushing chest pain, by 2040, every medical graduate will need to know how to assess and manage a patient whose weight and cardiovascular risk profile are going in the wrong direction.

Undergraduate, graduate, and continuing medical education, which combine content relating to the effects of diet, exercise, and the environment on the genome, will become commonplace. These rapidly changing facts also will be translated into practical advice about shopping, cooking, and accessing affordable, delicious, easy-to-make foods. In addition to nutritional counseling, the ability to translate state-of-the-science reviews in exercise, mindfulness, and behavior change strategies will be commonplace, if not required, components of standard medical education curricula. It is worth noting that these topics are currently the basis of an existing continuing education conference, "Healthy Kitchens, Healthy Lives," and are beginning to take shape in the form of "culinary medicine" courses at various US medical and allied health schools.[2,3]

Teaching kitchens, with built-in or portable stoves and ovens for demonstrations and hands-on cooking instruction, now exist or are being built in several dozen hospitals, medical schools, and corporate worksites across the United States.[2] These sites could become learning laboratories, where nutrition science is actively translated into practical advice for patients (and health care providers) through experiential learning, which is a critical adjunct to didactic presentations. It is conceivable that teaching kitchen nutrition laboratories may be comparable to the chemistry, biology, and computer laboratories considered necessary for the training of primary care medical professionals. Importantly, this imagined future does not suggest that physicians become chefs, nutritionists, or health coaches. Rather, participation in required rotations relating to food, food preparation, and lifestyle management can enable health professionals of the future to successfully refer patients, when appropriate, to other qualified members of health professions teams.

In 2040, primary care practices will likely depend on wellness teams composed of physicians, nurses, epigeneticists, registered dietitians, cooks and culinary educators, mindfulness instructors, mental health experts, movement and exercise trainers, and health coaches. These experts—collectively and individually—will provide personalized, hands-on instruction with regard to life skills. These life skills must include strategies to optimize one's personal self-care. Whether organized within a patient-centered medical home, accountable care organization, community health center, physician practice, or worksite, these wellness teams will ultimately be pilot tested, refined, and paid for in the same way that groundbreaking primary care teams were invented, refined, and paid for by third-party insurers in the 1970s.

By 2040, perhaps hospitals will compete for the title of most exceptional food in their community. Ideally, hospitals and large practices may become café or restaurant destination sites, complete with farmers' markets and demonstration kitchens, as opposed to landlords of highly processed food chain and convenience restaurants, as they are today. Healthy, yet delicious, foods in a hospital's café or restaurant can easily be replicated for on-demand, in-room dining by patients and their visiting family members. In this way, hospital food services may become a profit center while modeling health-promoting behaviors and providing a healthier patient experience. It is important to note that this model already exists at some sites.[2]

By 2040, wearable or implantable devices to track movement, exercise, and perceived stress alongside a broad range of continuously monitored biomarkers (eg, electrocardiogram, blood pressure, blood glucose) may be a standard component of one's ongoing portable medical record. The skills to interpret these data in the context of advising patients about their day-to-day activities will also have become essential.

Lastly, and perhaps most significantly, new primary care clinician role models, who not only excel in patient care, research, and teaching but who can also "walk the walk" when it comes to modeling health promotion and a balanced lifestyle, will emerge. These role models will be retained and promoted in undergraduate and graduate teaching institutions.

In the 1970s, almost en masse, physicians quit smoking due to scientific evidence of the harmful effects of this behavior. They also actively advised patients and societies to not smoke. This rapid transformation can be viewed as a successful strategy whereby physicians' personal behaviors inform their counseling behaviors.[4] Thus, by the year 2040, primary care physicians may need to be trained, assessed, and deemed competent prior to graduation for their skills relating to nutrition, obesity, and physical activity counseling. The educational mantra of "see one, do one, teach one" will have taken on a new meaning.

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Many of today's primary care residents have recognized that the current educational system has ill prepared them for the tsunami of obesity and lifestyle-related chronic disease they are about to confront in practice.[2] With a collective shift in priorities and the engagement of a broader collective of stakeholders as partners, today's medical educators can change the current state of affairs now, without further delay.

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