

STATE OF THE ART
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The Future of Health Promotion in the 21st Century: A Focus on the Working Population

Abstract: *The purpose of this article is to synthesize developments from various disciplines including the medical, wellness, psychology, and sociology fields to shed light on where health promotion is headed in the next 25 years. Lifestyle medicine practitioners will continue to play a large role in helping people achieve the highest levels of wellness, which does not simply mean the absence of disease. New research identifies the important roles of many diverse factors such as relationships, lifestyle behaviors, emotional outlook, positive environment, mind–body connection, use of technology, and work styles, which can help each person achieve the fullness of life, vitality, and flourishing that characterizes a high level of well-being.*

Keywords: wellness; health promotion; vitality; workplace

Retrospectively predicting the future is the most accurate method.



Prospectively predicting the future is limited by current knowledge, available tools, biases, and the unknown.

—Dee W. Edington, PhD

Health promotion or wellness has evolved relatively rapidly over the past 3 decades in response to the advances in our knowledge about health and changes in society. We anticipate the next 25 years likely will be packed with as many advances in our understandings of health and the influence of lifestyles and wellness as the past 25 years. As imprecise as any prospective vision, we begin this article with a brief description

look forward into the future of health promotion, particularly in the adult working population:

- Factors influencing the evolving new lifestyles
- New insights about the mind–body connection
- Positive environments, cultures, and climates
- Wellness technology

 We anticipate the next 25 years likely will be packed with as many advances in our understandings of health and the influence of lifestyles and wellness as the past 25 years. 

of a few of the factors that will influence individual and population health by the year 2040. We use current information from each of these factors to first project what the population will look like in 2040, and then to anticipate how wellness and health promotion will contribute to creating thriving and flourishing individual and organizational health. The following are the topics we will touch upon as we

- Dealing with changing work styles
- Essential new life skills
- Successful aging
- Health promotion in the 21st century

Factors Influencing the Evolving New Lifestyles

Halfway into the second decade of the 21st century gives us an estimate of

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which factors we could use as the basis of a future vision of health promotion and wellness over the next 25 years. There are dozens of potential factors for this first section as well as some that are unknown at this time. We have chosen a limited number of factors to highlight the importance we feel they will play in meeting the health enhancement needs of America and worldwide within the next 25 years.

It is clear that lifestyle medicine and wellness will have a critical role in the evolving health of humankind. It will take a collaborative effort of all strategies in all areas to discover and develop the human potential needed for thriving and flourishing individuals and organizations in our evolving world. Lifestyle medicine, health promotion, and wellness are used within this article as examples of the strategies that encompass prevention and health for personal and organizational well-being and quality of life.

From the 1980s through 2015, wellness is accepted and will continue to meet the challenges of the precursors to chronic diseases. Our current knowledge makes it clear that the health of an individual is affected by everything that goes on in his or her life wherever they happen to be. Going forward, wellness will need to expand to meet the current and coming challenges of lifestyle stresses, emotional burdens, and the challenges brought on by societal changes in the next 25 years.

To meet those challenges, we accept the need to continue the current work of screening and then reducing some of the risk factors for chronic diseases. In this fast-changing world we will need to redefine the expected impact of our various external environments, cultures, climates, and relationships in light of the individual's unique strengths. In general, any population or societal change could require a modification of our lifestyles, including our attitudes, social skills, personal and social relationships, and work styles. The following paragraphs include some themes that play an important role in the future of health promotion, and elucidate the factors involved in each person's and

organization's level of wellness and choices that are made.

Personal and organizational values are the basis of our life's purpose, mission, and vision and are influenced by and have influence on those around us and on the environment and relationships where we live and work. Our core values, perhaps more than anything else, influence how we choose to live our lives. In essence, our core values act to provide a perspective to the change and rate of change. However, when our environment and the world are changing so fast, our lifestyles will have to change faster than in past generations.

In the early to mid-20th century, values were passed from generation to generation. Recently, younger generations are much more aware of the changes in society and the world due to constant access to global information that their values are often formed relatively independent of the previous generation's values. Having happiness as a high objective could negate some of the less-than-positive experiences that happen in one's life. There are happy people all over the world, and the most common trait seems to be the value they put on relationships.¹ Their approach to life and their lifestyles are mostly influenced by their internal perceptions of the world and their common friends living in a common environment.

Context and other people matter in terms of why, where, what, and when change happens, taking into consideration individual, family and friends, workplace, community, and state, national, and worldwide policies. Wellness will play a major role in providing developmental and coping strategies on how we learn and adjust in creating and supporting all people to thrive and flourish within these various contexts.

Other people matter in terms of internal individual knowledge of themselves and their relationship strengths in each of the context venues. Individuals will need to develop life skills to meet the rapidly changing situations and respond to the requirements of the decision-making

process. We recognize that we change our perception of individual and population health, and will continue to change as we learn more about the determinants of health and how the positive outliers (the healthiest of the healthy individuals and organizations) successfully improve and maintain their health. Health promotion and wellness professionals will have to become aware of the context and how to help individuals thrive in that environment and culture.

Self-leadership (the desire and ability to take initiative in one's own health and well-being) will be increasingly valuable as individuals move around the globe and into and out of different cultures. America introduced the world to the concept and practice of public education for all. This educational development allowed us to make competent decisions when faced for the first time with a new situation. Now America has another opportunity, through health promotion and wellness, to introduce educated self-leaders in making individual and structural decisions related to healthy, thriving, flourishing, and high-performing individuals, organizations, and society in general.

Where we choose to live and work is clearly influenced by our decade and place of birth, schooling, and work we choose. "Keeping up with the Jones" was a popular slogan in the mid-20th century, and it continues to be a factor in decision making related to the right school, right job, right neighborhood, and right friends. However, there is some evidence that this attitude may be changing.

- The Baby Boomers are simplifying their lives, as they move into the 60s age bracket at the rate of 10, 000 people per day. By 2040 they will be in their 80s and perhaps still living primarily in the suburbs or retirement communities. Some of these retirees will continue to be active and use organizational health and wellness centers and other resources while others will use community centers to maintain their wellness activities.

Wellness or health promotion personnel, on their own or working through lifestyle medicine clinics, will have an opportunity to stay in touch with these individuals.

- Generation X individuals (in their late-60s by 2040) are following their own ideas about living and working and are moving or have moved into either the central cities or beyond the suburbs or even rural. Many of their wellness needs will be similar to the Baby Boomers at their respective age. The difference may be that the Generation X population was exposed to wellness initiatives throughout their work life but will need wellness activities to counter the aging impact of a lifetime of activity.
- The Millennials (Generation Y) will be in their mid-50s and are looking for meaningful work, real relationships, and tend to be moving into the central cities, often creating a reverse commute (city to the suburbs). The Millennials are the first generation who have been exposed to wellness throughout their lives and have certainty about what they want to do. They bring a new outlook into the workplace through hard work, having fun, and being open to wellness activities other than physical and risk-factor objectives. They respond to individual attention and customized wellness plans made especially for them. Wellness or lifestyle medicine clinics will be popular if the wellness personnel create unique advice.
- Finally, Generation Z will be in their late-30s in 2040 and looking to change the world through networking and relationships. They will choose to live where they can make a difference in their profession or in society, probably in concert with their friends. They would be expected to have created and maintained their wellness routine on their own or by participating in relationship-building activities. Even though they have been exposed to wellness, they will seek lifestyle medicine clinics to keep in touch with the most recent science.

It will be interesting to observe the changes in health risks, morbidity, and longevity of each of these categories of the population, including Generation Z (also sometimes referred to as the iGeneration) who are now in their teens, as we progress through the next 10 to 20 years. Each of the population groups listed above has had its identity shaped by world politics, economics, education, health care, and technology, especially Generation Z who from birth is the first generation to grow up with technology, especially web technology.

Evolving Lifestyles and Relationships

Clearly relationships greatly influence our lifestyle and behaviors at every age. Behaviors such as how we dress, speak, make decisions, recreate, exercise, and eat are made in concert with others in our social network either inside or outside of family, friends, or work. The more important the relationships, the more they influence the mutual lifestyles.

Health care costs and availability may be the factor most influenced by technology since patient care is moving more toward remote sensing, as advanced systems become available. In its most extreme case we may become the “clinical man”² where our biometrics, senses, and emotions are captured electronically and monitored in some central office where there is the capacity to analyze the signal and contact us with instructions.

As more diseases and early symptoms are discovered (at all ages), a greater number of individuals will be referred to specialists offering more targeted treatments. Lifestyle physicians will either staff their offices with wellness professionals or make referrals to health promotion or wellness centers to help their patients carry out or remain on protocol. Consistent with physician strategies, there will be a desire for less dependence on pharmaceuticals and more use of wellness and lifestyle solutions.

Wealth and socioeconomic influence is likely the most influential factor in making future lifestyle choices, even as

it is in 2015. Adequate finances go a long way in affecting where we live, what we buy, what we do, with whom we associate on a social basis, and what we value. In some cases individuals are driven by making more money, rising to a higher level in the organization, associating with more powerful friends, or owning a pricier automobile. On the other hand, some individuals are driven by meaningful work, family or friends, doing good for others, a simpler and uncomplicated life, or spiritual convictions. For those Americans unfortunately living at a base subsistence rate, possibly less educated, and in an environment with few resources, lifestyle medicine could be the solution for those who cannot afford the Western medicine style of medical-pharmacy-hospital care.

Socioeconomics are a major driver in our choice of what lifestyle we choose to follow. The best evidence of this is to look at the marketing industry and the mail you receive at home. Much of what you receive is related to your income and where you live by zip code or even by the block on which you live. Even when on the Internet the advertisements are created related to your viewing and searching patterns. Marketers are the leading researchers in terms of lifestyles and the factors that determine your choices.

A population lifestyle is even more complicated than describing the lifestyle of a single individual. This is because no one individual is average on any combination of factors. We are each on a continuum on each of the above areas. The marketing and survey companies put their spin on their population data and advertise, “. . . this is the latest or most popular or what most people want . . .” and, of course, we all want to be up-to-date with the latest fashion, cars, and food. In this way our lifestyles are often imposed on us by marketing and peer pressures.

Wealth distribution and the disappearing middle class indicates that America is going in the opposite direction from individuals having the opportunity to choose “life, liberty, and

the pursuit of happiness” to a country of have or have-not class divisions in the population. The respective lifestyles of these three populations are being driven by the aforementioned factors, most obviously socioeconomic status.

At the end of the day, we know not everyone will be capable of rising to the level of the average American within any or all of the factors above plus household income, safe neighborhood, and job level. With an effective approach to lifestyle medicine by 2040, we can adjust our attitudes to include optimism, creativity, gratitude, empathy, compassion, and our own energy level and our definition of happiness. Lifestyle medicine, health promotion, and wellness will make a major difference in these areas, but it will take a major change to allow all Americans to have an equal opportunity.

We may feel we have a choice of the lifestyle we live but, in fact, the context of how and where we live and the people in our lives may be making our choice for us. Some of the scariest predictions of our lifestyles in 2040 do not come from the known influences that impact us but those of which we are not yet aware. These would include, but are not limited to, subliminal messages delivered with the purpose of influencing our thoughts, emotions, and objectivity. Perhaps it will be left to lifestyle medicine to assess the risk these messages imposed on different generations, on different socioeconomic populations, or on any other vulnerable population.

New Insights about the Mind-Body Connection

While the relationship between the mind and body has been debated by philosophers, physicians, and other pronounced spiritual and scientific contemplators for hundreds and even thousands of years, it is widely accepted in more recent decades that the mind and body are inseparable. Even so, our understanding of the true nature of the relationship between the mind and the body is still in its infancy. A

convergence of compelling evidence from diverse research disciplines is teaching us a great deal about this relationship every year, and what we are finding has relevance for health and wellness practitioners as our field moves into the future. There are several prominent areas of exploration that are helping to answer some important questions:

- How does your mind/brain influence your body?
- How does your body influence your mind/brain?

Even more intriguing is the question of whether the way that we use our brains, minds, and bodies can physically alter our genetic destiny. Research in the social sciences, psychology, neurosciences, and medicine are creating fascinating new insights with practical relevance for the field of lifestyle medicine.

Our “Plastic” Brains

In the past few decades, the knowledge that our thoughts can physically change the structure and function of our brains has captured the rapt attention of our scientific community and the general population. Neuroscience is discovering that what we have believed for so long about the mind is all in question. We now know that the brain is much more malleable or “plastic” throughout life than we once thought, and new discoveries about the brain have led to some of the most revolutionary and important ideas in science. This new knowledge is shaping our understanding of the structure and function of the brain itself, and how we view human nature, brain injury, mental health and aging.

One important benefit of our brain’s plasticity is its ability to help us strengthen our physical capacity for more positive mindsets and dispositions. According to Rick Hanson, PhD, neuropsychologist and Senior Fellow at the Greater Good Science Center at University of California, Berkeley, “If you point your attention toward the good in

life, the better your brain will get at fostering goodness, and the healthier it will become.”³ There is an increasing body of evidence that supports the idea that practicing gratitude, mindfulness meditation, and reframing negative thoughts into positive affirmations all work to physically change your brain and strengthen positive states of mind. Helping people understand the benefits of such practices on health and flourishing has important implications for wellness and prevention practitioners. As Hanson points out,

Because of all the ways your brain changes its structure, your experience matters beyond its momentary, subjective impact. It makes enduring changes in the physical tissues of your brain that affect your well-being, functioning, and relationships. Based on science, this is a fundamental reason for being kind to yourself, cultivating wholesome experiences and taking them in.

Our brain’s plasticity can make it possible for us to strengthen our ability to be in the moment, to better encode the information that we attend to, to better recall our information and experiences, and be more mindful.

Mindfulness

Mindfulness can be thought of as a mental state of focused awareness and calm acceptance of one’s thoughts, feelings, bodily sensations, and surrounding environment in the present moment. Research is increasingly supporting the positive effects of mindfulness practices on both our mental and physical health (e.g., lowered emotional stress, reductions in blood pressure, improved symptoms of chronic conditions to name a few).⁴⁻⁹ Mindfulness meditation is finding a place in employer settings to help decrease employee stress, and improve resilience, vigor, and overall well-being,¹⁰ and there is evidence that mindfulness can help improve self-compassion and quality of life in health care practitioners.¹¹ Some of the most intriguing work is finding that mindful meditation can actually affect the

gray matter of our brains,^{12,13} and even change the expression of our genes in ways that can significantly improve our health.¹⁴

Epigenetics: Reshaping Our Habits, Our Health, and Our Genetic Heritage—Future and Past

Mindfulness meditation is only one of the ways that we may be able to change our genetic expression for the better. Now there is growing evidence that we can reshape not only our current habits but also the habits of our future generations—and we may actually be able to rewrite the genetic destiny passed to us from our family history. The field of epigenetics is helping us understand how what we do with our bodies, what we feed it, how we use it, and where we live, can all influence not only our bodies but also our brains and minds, and potentially the expression of our genes, for better or worse.¹⁵ Epigenetics is the study of factors that influence the expression of our genes in ways that can be passed across generations without actually changing our DNA sequence. This promising area of study is increasing our understanding of the impact of individual lifestyle behaviors and environmental factors. It is also finding support from the National Institutes of Health Roadmap Epigenomics Program,¹⁶ developed to investigate the role of epigenetics in shaping human health and disease.

As Dean Ornish, MD, stated in a 2008 TED Talk, “When you eat healthier, manage stress, exercise and love more, your brain actually gets more blood flow and more oxygen. But more than that, your brain gets measurably bigger.”¹⁷ New evidence is indicating that while our genes are our predisposition, they are not necessarily our fate. We can actually change the way that our DNA is expressed in our physical bodies in ways that can improve our ability to fight disease, and thrive more generally.¹⁸ According to Ornish,

New studies show that these comprehensive lifestyle changes may

change gene expression in hundreds of genes in only a few months—“turning on” (upregulating) disease-preventing genes and “turning off” (downregulating) genes that promote heart disease, oncogenes that promote breast cancer and prostate cancer, and genes that promote inflammation and oxidative stress. These lifestyle changes also increase telomerase, the enzyme that repairs and lengthens telomeres, the ends of our chromosomes that control how long we live.¹⁷

The field of environmental epigenomics is also providing evidence that our prenatal and postnatal environments and experiences can influence our risk of developing certain chronic diseases, including asthma, diabetes, autism, cancer, cardiovascular disease, obesity, and schizophrenia.^{19,20} This growing new science has tremendous implications for the future of practice in wellness and prevention, in addition to psychology and medicine.

Our Body’s Impact on our Brains, Minds, and Behaviors

In addition to the evidence that the mind influences the body in important ways, there is also a growing body of research indicating that the body also has the ability to make significant changes in the brain and mind. The field of Embodied Cognition, an outgrowth of the fields of social and cognitive psychology, is providing evidence about the bidirectional relationship between the body (our motor system) and how a person feels—emotionally and spiritually. The way we carry ourselves (our physical posture), our facial expressions, the energy we give out, and how we receive the energy of others and our surroundings can all influence our emotions and attitudes.²¹

The research of Harvard Business School Professor Amy Cuddy, PhD, is helping improve our understanding of the link between our body language and our physiology, our emotions, and our behavior. She has found evidence that “faking” body postures that mimic positions of power (or “power poses”) can influence our testosterone and cortisol levels, increase performance under some conditions, and can help improve coping in stressful circumstances.²²

Positive Environments, Cultures, and Climates

An increasing number of employer organizations understand the importance of purposefully creating healthier workplace cultures and environments to better support employee health and well-being as we move further into the 21st century.²³⁻²⁵ Many of the earliest “culture of health” efforts have focused on putting more emphasis on wellness programs and initiatives within organizations. While this can be an important part of the puzzle, incorporating health into a culture does not happen overnight. It is an evolution. Like any evolution, creating a flourishing workplace and workforce culture will take time; time to create a shared vision, time to communicate and live the vision consistently, time to evolve shared accountability, time to build trust, and the patience and acceptance to persist while the evolution unfolds.

Creating a positive and healthier environment and culture will also take a great deal of alignment and collaboration among many different constituent groups, both within the organization and surrounding it. It will take purposeful alignment of organizational values, vision, policies, benefits, programs, and initiatives. It will take courage, commitment, persistence, and patience from leaders and everyone throughout organizations.

The field of evolutionary psychology is providing important perspective of relevance for employee and workplace health and flourishing.²⁶ Natural sunlight in the work environment has been found to be positively correlated with employee well-being and job satisfaction.²⁷ Research has also shown that exercising outdoors in a pleasant setting, such as in a park, is associated with improvements in depression to a greater degree than jogging through urban environments.²⁸

Physical activity in those pleasant settings also improves cognitive functioning, measured by direct attention.²⁹ In addition, simply viewing images of natural settings and sitting in a room with live plants can increase prosocial behaviors,³⁰ which are defined as voluntary actions that are intended to help or benefit another individual or group of individuals.

Recognizing the Evolving Role of Relationships

Organizational cultures are affected by programs, policies, benefits, and environmental support, but cultures are also strongly shaped by relationships throughout the organization. This includes the way that people respect, trust, and interact with each other. It is about how the people in organizations live and work, guided by a core set of values that they share with each other and with the organization.

While we discussed brain plasticity earlier in this article, there is an additional discovery from neuroscience that may help us better understand the hardwired social nature of human beings and other primates. Giacomo Rizzolatti, MD, from the University of Parma in Italy, discovered a unique type of neuron in the human motor cortex. Now known as “mirror neurons,” these neurons fire both when a person makes a movement and when he or she sees someone else make a similar movement. Vilayanur Ramachandran, PhD, Director of the Center for Brain and Cognition at the University of California, San Diego, believes that these mirror neurons give us an innate capacity for empathy. According to Ramachandran, the mirror neuron,

Is truly astonishing. Because it's as though this neuron is adopting the other person's point of view. It's almost as though it's performing a virtual reality simulation of the other person's action.³¹

The firing of mirror neurons represents a very real connection between people—“there is no real distinctiveness of your

consciousness from someone else's consciousness.”³¹ This discovery has huge implications for our culture, both broadly and within our employer organizations. It brings a new dimension to the importance of modeling healthy behaviors or truly living by the core shared values of a company. When we experience other people's actions in our employer organizations, especially the actions of leadership and other influential people, it is almost like we are actually experiencing the behavior or living the values ourselves just a little bit, even before we adopt similar behaviors.

Purposefully Architecting Healthier Milieus

Milieu: The physical or social setting in which people live or in which something happens or develops. (*Merriam Webster Dictionary*)

People spend much of their time in their places of work, but after work we go back to our homes and into our communities. Depending on the kind of stresses and frustrations we experience at work, we may leave the workplace tired, frazzled, and generally sapped of any energy to resist temptations or stick to any promises we have made to eat healthier, increase our activity, spend quality time with our family, or other positive behaviors. To effectively support the health and well-being of employees we must also think beyond the workplace to homes and families, local and regional communities, and our national and global societies. Just as we are responsible for becoming self-leaders of our own health and well-being, we can ask for social support from those we live and work with, and to the degree possible, take some control over who we choose to interact with in our lives and how we interact with them.

Wellness Technology

Technology continues to evolve in all facets of life. It is no different in the wellness realm, and it will likely play a larger role in wellness programs over the next 25 years. Consumers have tens of

thousands of wellness-related mobile device applications (apps) available to them and the choices can be overwhelming. One wellness item that is becoming increasingly more common is the use of wearables. According to wearables.com, wearable technology, also known as fashionable technology, wearable devices, mHealth (mobile health), tech togs, or fashion electronics, are clothing and accessories incorporating computer and advanced electronic technologies. Wearable gadgets and mobile apps are making it easier than ever before for individuals to track their own health and they have come a long way since the earliest fitness watches and pedometers.

The latest health monitors do not just track fitness but also lifestyle, analyzing whether a person's habits and daily activities are having an impact on his or her wellness. Some devices also alert the consumer whenever something seems out of the ordinary. Being able to actively measure one's health may lead to enhanced wellness, and a potential reduction in the need for physician visits. Some tracking devices measure many variables, such as duration and quality of sleep or physical movement, and also allow the user to enter certain data such as meals and mood. Based on what the wearable device learns from an individual's daily activities, it will give suggestions in order to maximize wellness. For example, if a user did not have a good night's sleep, the wearable will urge him or her to eat a high-protein breakfast and drink an extra glass of water on waking.

Wearable wellness monitors utilize sensors and accelerometers to measure heart rates throughout the day in relation to detected movement. Sleep patterns are also tracked. These devices often get paired with an online dashboard to view data over time and also provide the ability to print or e-mail reports. One company is marketing a special t-shirt with ribbed “smart sleeves,” having the ability to measure the user's heart rate, respiration rate, and skin temperature. The garment can be further customized

to measure skin moisture and electrophysiological signals such as EKG, electroencephalography (EEG), or electromyography (EMG). This type of constant monitoring is definitely not necessary for the average individual but is potentially very valuable for someone recently discharged from the hospital or with an arrhythmia, for example.

The convenience of at-home diagnostics for a variety of conditions could radically change the way practitioners monitor their patients with chronic conditions. Google is reportedly developing a contact lens sensor that continuously monitors blood sugar levels.³² Some other devices include a blood glucose meter, a blood pressure meter, or scales. Each has a built-in wireless module that automatically sends readings to the user's home base station or cell phone. The station then forwards the data to a secure online database using a protected Internet connection. In addition to viewing the data, doctors have the option of having an alert sent to them under defined conditions; when data exceed or fall below a predefined threshold, the doctor is informed. This lets medical personnel help quickly in the event of hyperglycemia or hypoglycemia in a patient with diabetes, for instance.

While 70% of adults are aware of wearable health devices, only 15% of the general population currently uses a device in their daily lives.³³ Sales of wearable activity trackers are expected to triple over the next few years.³⁴ Who is embracing wearable technology? One survey showed that adults of all ages, weights, and both genders were using wearables to track physical activity, which indicates they may be adopted by a diverse population, particularly when introduced by a physician or as part of a wellness program.³⁵ While early adopters have taken an interest in wearable devices, what will motivate others to invest in them? Nearly half of Americans surveyed in Nielsen's Connected Life survey³³ expressed their interest in purchasing wearable tech in the near future. Limiting factors may be cost, since 72% of respondents said they wish wearables

were less expensive, and fashion, as 62% said they wish wearables came in forms besides wrist bands and watches. This market will likely continue evolving—as newer devices such as smart glasses, jewelry, and clothing with embedded health technology enter the marketplace.

Currently, wearables are frequently used in conjunction with incentive programs in workplace wellness programs. One survey projects that a large percentage of wearables will be offered by health care providers in the near future.³⁶ However, as the technology moves ahead at a rapid pace, several issues such as data protection and privacy concerns will need to be addressed.³⁷ Since smart watches are so novel, they can expose workplace information technology systems to cyber attacks and other data issues. The license agreements that accompany many wearable devices are problematically vague, creating little assurance as to their inherent data protection.³⁸ Some trackers also have been criticized for a lack of accuracy, with step counts varying as much as 22% between wearable devices.³⁹

While many apps and devices have the potential to encourage healthier habits and are accessible to large numbers of people, there is debate about whether or not they actually result in improved health.⁴⁰ There are few published studies of these types of programs. Many apps are untested and unvalidated and make claims that are not compatible with accepted medical advice. Apps and wearables are also not regulated by the Food and Drug Administration unless an app turns a smartphone into a medical device or accessory to a medical device. While wellness apps and wearables are most likely not harmful, it is quite possible that they are not very helpful, since many wellness app and wearable users are already very healthy, and the devices may cause “worried well” individuals greater anxiety. As we look to the future with even more development of wellness technology, care should be taken in the medical and wellness fields before devices and apps are overly promoted or relied on as medical or wellness tools.

Dealing With Changing Work Styles

24 × 7 Availability

Along with advancement in technology comes the impact of how we interact with it. In the work setting, email has become an essential mode of communication. While improving efficiency and access to information, it also allows for remote access and around the clock availability. Several decades ago, work was typically an 8-hour shift and the job mainly stayed at the workplace. Today, work bleeds into home and leisure life much more fluidly. The expectation at several workplaces is that employees respond to emails, cell phone calls, and texts irrespective of where they are or when the request happens. In a recent survey, while 39% of employed online adults said the Internet, email, and cell phones allow for more flexibility in the hours worked, 35% said this technology increased the amount of time they spend working.⁴¹

The trend in connectivity is expanding to a broader population. Mobile phones and tablets are expected to grow from 7.7 billion in 2014 to over 12 billion by 2018. In 2013, the average daily email traffic worldwide was 100.5 billion (not including texting or instant messaging), which is expected to increase to 132.1 billion per day by 2017. Today, 46% of worldwide email users check their email through a mobile device, with an anticipated increase to 80% by 2018.⁴²

This surge in accessibility of technology heightens the perceived need to keep up with the demands of staying connected, negatively impacting stress, sleep, and mood.^{43,44} Wanting to “unplug” was one of the top 5 most popular New Year's resolutions for 2015, as tweeted on Twitter.⁴⁵ This constant connection could be detrimental to productivity—triggering burnout and possibly even leading to more sick days.^{46,47} Having uninterrupted downtime to recharge while away from work is not often widely accepted by employers, and management support for such efforts is a necessary part of the culture shift needed at the workplace.

Recognizing the negative effects that techno-stress has on well-being, there is an increasing awareness of the benefits of unplugging and detaching from the constant stream of information and interaction. Activities like scheduling periodic screen breaks throughout the day, limiting screen hours, and designating “screen free” zones at home help technology users to become more aware of the detrimental lure of screen activity.

Sedentary Environments

As jobs are becoming more technology-based, many work environments deal with a vast amount of sitting: at one's desk in front of a computer, on the phone, or in meetings. Outside of work, even more sitting occurs while in transit and in leisure activities like watching television and playing screen-based games. Online activities like shopping and banking replace physical trips into the community. While being an improvement in convenience, the vast number of behaviors accomplished through technology leads to many hours a day focused on some type of laptop monitor, tablet, or mobile device screen, typically while seated. This overuse of screen-based media is linked to a more sedentary lifestyle. At work, at home, and in the community, sedentary lives have become a factor in the obesity crisis in our country.^{48,49}

In a large epidemiological study, data from over 120,000 US adults were analyzed over 14 years, showing that time spent sitting was associated with mortality. Women who spent more than 6 hours of sitting per day had 40% higher mortality rate than those who reported sitting for less than 3 hours a day. For men, there was a 20% higher mortality rate. When combined with less physical activity, the death rates were even higher.⁵⁰

As organizational leaders in workplaces are becoming more aware of this issue, they are making changes at the worksite to help counteract prolonged sitting, such as offering standing desks, onsite gyms, and walking meetings. Encouragement to take breaks from screen time to include movement boosts

performance, creativity, and mental agility.⁵¹ Whether at work or outside of work, every opportunity to build additional physical movement into the day, such as walking, bike riding, or taking the stairs, helps counteract sedentary lifestyles. In the health care setting, there is a recent trend in primary care medical office visits to make “exercise” part of a routine vital sign assessment, along with blood pressure, temperature, and weight/height. This culture shift in physician office visits builds awareness of the importance of moderate to vigorous physical activity in the clinical setting with patients. Other settings promoting physical activity, such as schools, neighborhoods, and local public health departments contribute to a broad approach to make positive choices about daily physical activity easier for individuals and families as we move forward into the next 25 years.

Multitasking

The various modes of technology currently available allow for several levels of activities, many that we interact with simultaneously throughout the day. It has become common to answer emails while on conference calls, eat lunch at our desk while watching a webinar, talk on the phone while driving, or respond to text messages while dining with others. In a whirlwind of a busy work and home life, it has become a natural tendency to accomplish more in a day than there are hours. Specifically in the workplace, greater productivity has been equated with doing more, and the expectation is set high for efficiency, sometimes with little attention to quality, compassion, and creativity. Multitasking tends to elicit an “autopilot” mode, adds to stress, and makes it less likely to be present in the moment and notice relevant details.

To counteract this, intentional single-minded activities promote a time for mindful observations of objects in our surroundings, or in people with whom we interact. These acts of reflection enhance our appreciation of beauty and awe, which contributes to creativity and inspiration. A focused time of mindful

meditation could help center thoughts and intentions on what brings joy and meaning into our lives, relating it back to our unique purpose and personal values. Slowing down to do one thing at a time and savor enjoyable activities are ways to counter the busyness of multitasking. Finding ways to foster positive emotions that is unique to each individual in turn leads to a greater sense of well-being.^{52,53}

Essential New Life Skills

The environment in which we live and work is rapidly changing and will continue to do so in the future. The transformations taking place in our society make it imperative that we acquire ways to not only adapt and cope but also to actively thrive and flourish. Defining health as broader than what lies in the physical and even mental domains establishes a perspective that allows us to increase our capacity to make positive lifestyle changes. Developing a meaningful and thriving life is a lifelong process seeking to embrace one's unique purpose and intentionally engage in the changing world around us. These characteristics build on personal strengths and encompass a “growth mindset” to continuously advance our overall well-being and achieve a deep sense of satisfaction.^{54,55}

The emerging strides of research taking place in the field of positive psychology examine topics such as creativity, joy, compassion, and love with scientific rigor that provides tangible insights into pursuing a flourishing lifestyle. This evolving research allows for ways to increase positive emotions, cultivate a sense of meaning, and find deep engagement in relationships, work, and leisure.⁵⁴ Positive emotions lead to greater creativity,⁵³ and building optimism and positive emotions helps deal with stress and be resilient when adversity strikes.⁵⁶ Actions such as expressing genuine appreciation to others, recounting daily examples of gratitude, and envisioning a rewarding future lead to a deeper sense of inner happiness. While a consistent practice enhances contentment, the type and

amount of positive activity that influences well-being differs depending on individual preferences and motivations.⁵⁷

These life skills are not achieved in a vacuum. Whether at home, at work, in the community, or in the global world, the dynamic interchange of personal relationships sets an important context of inner growth and well-being and will promote improved wellness for individuals and organizations.

Successful Aging

Between 2010 and 2040, it is estimated that the number of older Americans (age 65+) will double.⁵⁸ Rowe and Kahn introduced the concept of “successful aging,” which helped build the foundation for strategies designed to optimize the health of older adults rather than just addressing the negative consequences of disease or functional loss.⁵⁹ Current definitions of healthy or optimal aging typically include the cornerstones of (1) minimizing the risk of disease and disability, (2) addressing chronic conditions through self-management, (3) maintaining a high level of physical and mental functioning, and (4) supporting active social and civic engagement.⁶⁰ All of these components are recognized in the Centers for Disease Control and Prevention’s Healthy Aging Research Network’s definition of optimal aging, which states:

Healthy aging is the development and maintenance of optimal physical, mental and social well-being and function in older adults. It is most easily achieved when physical environments and communities are safe and support the adoption and maintenance of attitudes and behaviors known to promote health and well-being and when health services and community programs are used effectively to prevent or minimize the impact of acute and chronic disease on function.⁶¹

Loss of cognitive function is a major concern of most adults as we age.⁶² The aging demographic will consequently

affect the number of people living with the effects of cognitive decline, which in turn affects caregivers, individual and societal economics, and health care systems. Adults with cognitive decline and dementia are at greater risk for losing the ability to perform instrumental activities of daily living, are relying on paid or unpaid caregivers, and use more long-term care, skilled nursing, hospital care, and home health care compared with other older adults.⁶³ There are now a multitude of commercially available “brain games” that utilize technology for exercises designed to help us mold our attention, our memory, even our physical abilities like sight, hearing, and balance, among many others. While these games and exercises are not a magic bullet (you have to diligently work at it to change the structure of your brain), they are increasingly popular tools in this growing field of maintaining cognitive function as we age.

To address the challenges of aging, practitioners, community groups, and wellness program directors can utilize the Six Dimensions of Wellness for aging defined by the National Wellness Institute.⁶⁴ These 6 dimensions are the following: (1) Occupational wellness—contributing unique skills to rewarding paid or unpaid work; (2) Social wellness—forming and maintaining positive personal and community relationships; (3) Intellectual wellness—lifelong learning of new skills and knowledge; (4) Physical wellness—regular participation in physical activity, healthy eating, and appropriate health care utilization; (5) Emotional wellness—taking personal responsibility for decisions and their outcomes with positivity; and (6) Spiritual wellness—identifying purpose in life and a value system. Maximizing these dimensions of wellness may protect cognition and physical functioning in aging.⁶⁵

Individuals, communities and practitioners should be aware that intentionally maximizing wellness in all 6 of the aforementioned dimensions can be health promoting and health protecting as people age. There is evidence in the literature that strong wellness in one

dimension can compensate for weaknesses in other areas.⁶⁶ Moreover, strength in 2 or more dimensions has even greater positive impacts on healthy aging than strength in just one dimension.⁶⁷ The interconnected nature of the dimensions of wellness points out the importance of treating individuals as whole, unique beings rather than just a set of biometric values, symptoms, or conditions. Lifestyle choices can affect each and every one of the dimensions, which is an important understanding that each person should acknowledge as we age. Healthy aging is not something that just “happens” to people. Optimal aging requires individuals to make the healthiest choices for using their energy, time, talents, and resources. As medical breakthroughs, genome research, and effective pharmaceuticals continue down the path toward extending the human lifespan, attention to fostering overall well-being in older adults will aid in a fulfilling quality of life as well as longevity of life.

Health Promotion in the 21st Century

This article touched on just a few of the many factors affecting health promotion in the next 25 years. The aforementioned factors plus many others may contribute to the lifestyles individuals choose to live in 2040. Health promotion and wellness will help the physician in directing the individual patient to a level of thriving and flourishing that leads to an increase in performance in all areas, including the workplace. In addition, knowledge of these factors, lifestyle information, and symptoms informs the lifestyle medicine physician or health promotion or wellness professionals what strategies and resources might be expected to be needed by 2040. Costs and outcomes will always be important, as they have been, but we expect that the importance of the growing level of health, thriving, and flourishing of the population and the organization will rise to the top. Thus, we will see higher levels of innovation, productivity, and quality attributed to a

positive level of wellness in individuals, families, and organizations. It is no longer just about diet, exercise, quitting smoking, or taking a pill to relax.

Doctors are beginning to think more “upstream” and look beyond the physical presenting symptoms and diseases of their patients.⁶⁸ Providing the highest quality of support and care for the health and well-being of patients will require better understanding of the many possible social and environmental determinants of sickness, health, and flourishing.

What can health care providers do to help people orchestrate healthier environments for themselves? In terms of the physical environment, we all need to get outside and walk, and find some green space to sit and relax. Take a moment to reflect on the highlights of the day, or of the week, being mindful of events and people for which we are grateful. Health care providers can help patients find the right resources to support their health and well-being in the workplace, in their communities, and within their own families. Be aware of workplace characteristics that might be influencing health and well-being of your patients. Understand the resources that are available in the workplace for employees, including wellness programs, disease management, and Employee Assistance Programs. Encourage each individual to be the architect of his or her own environment. If you cannot change your environment, take some small step to change the way you interact with it. Surround yourself with positive relationships, information, and books that promote your own resilience, optimism and healthy relationships.

As we look forward to the next 25 years of wellness and health promotion, we can recognize the foundation laid in this field in terms of establishing relationships between health behaviors and various health and economic outcomes. Then we can mold our thinking about health as something much more than simply the absence of disease. Seeking to achieve health and wellness with evidence of vitality and flourishing is where our field is headed. Lifestyle medicine and

wellness practitioners will be able to utilize technology and the extensive information available to us to move forward into the next generation of wellness and health promotion. **AJLM**

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