

Taking Brain Health to a Deeper and Broader Level

By
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Of the many people who sell brain health potions or programs, most have it wrong or at least incomplete. Considered in isolation, the concept of brain health is not really that important, but embedded in an integrative program of health, it becomes an essential component of a life plan. Most people are not actually concerned about the health of their organs individually. In fact, organ-specific health is a counterintuitive term since “health” derives from the Old English word for wholeness. When it comes to the brain, most people are more concerned about the quality of their thoughts and emotions (i.e., the products of the brain rather than the brain itself as a three-pound gelatinous mass of energized nerve cells). We should be aiming for total-body as well as total-mind health. New findings of modern science support the infrequently acted on but common sense notion that taking care of your entire body will result in a healthier brain and improved abilities to think, feel, and act. Yet even total body health is not a deep and broad enough concept to encompass brain health for the future. We must determine what we need to be holistically healthy and how to succeed on this journey toward integrated health.

In this article, we describe new programs emerging at University Hospitals Neurological Institute in collaboration with the community that take brain health to deeper and broader levels using a holistic approach. Any specific approach that works for an individual to enhance health in isolation is salutary but, in our view, an integrative approach is preferable.

What is health?

So what do we mean by health itself? The World Health Organization defines health as not merely the absence of disease but as a state of complete physical, mental, and social well-being.¹ In other words, a comprehensive view of health includes biological and psychosocial factors. Pills and procedures are not the only answer to staying well. Though staying healthy involves having access to good health care, other factors are equally important, if not more important. Those factors include one’s self-efficacy for health matters and living in a community that supports wellness in a sustainable way.

A person’s or a community’s adaptability or resilience also affects their wellness.² Particularly in today’s tumultuous times with physical (climate change and weather weirding) and mental forces (deep recessions and job insecurity) that are unbalancing our individual and community lives, it is important to be able to respond to change and stress to remain healthy. As the principal organ of learning, the brain plays a critical role in our ability to adapt. Our own aging will be a more successful, productive, and positive process if we maintain our resilience.

What is brain health?

The brain is embedded in the system of interdependent organs, and keeping the entire system healthy is the best approach to living well. However, the brain plays a particularly important role as the organ that learns and allows its owner to think and act in the world. Hence, the essential manifestation of brain health is mental health. Here, we mean mental health not just in the sense of the absence of psychiatric disease but rather supporting the ability of our brain to maintain its role in managing and enhancing our lives. Therefore, we must maintain cognitive health by keeping the brain engaged in activities that are both enjoyable and productive. Much discussion is given to the nature of the “best” brain health

An Integrative Framework of Lifelong Brain Aging

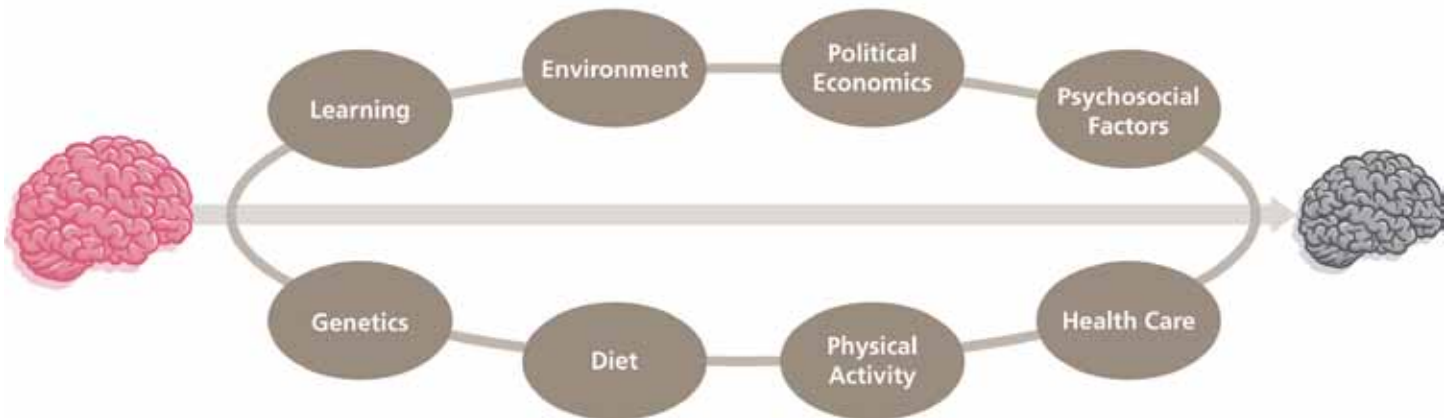


Figure 1: Life-span multicomponent model of brain health designed by Danny George and Peter Whitehouse

activities, and the data are sparse.³ Many people are trying to sell computer programs that exercise specific parts of our mental apparatus. Our view is that these programs may be helpful for those who enjoy them, but a more comprehensive view of enhancing cognition would include participating in multifaceted lifelong learning activities, particularly those that involve other people.⁴ Using the mind in social situations, particularly helping others, contributes to emotional well-being.^{5,6}

Furthermore, the brain is about feeling and not just thinking. Being (brain) healthy means having a set of values that guides us to appropriate ethical behavior in our own lives and in the lives of others. All of us should be more attentive to the aspects of life that challenge our honesty and sense of integrity. Do we pay our taxes and support a just society, or do we look for every opportunity to benefit only ourselves? How much does the consumption and possession of material goods dominate our lives? Having well-reasoned and ethically sound positions on social issues will contribute to a healthier way of interacting with the world.

Some would consider these emotional and cognitive aspects of brain health linked to a superordinate category as spiritual health. For some, spiritual health is found in traditional religious forms of worship and, for others, in more secular though deep connections to other living creatures and nature itself. Regardless of one's religious beliefs, this dimension has been demonstrated to be important to mental health. Though notoriously difficult to articulate, the most generally humanistic way to do so is to say that everyone needs a reason to want to keep healthy. What is one's purpose in life?⁷ Answering this question can be particularly challenging for elders, in a world where so-called retirement is being reconceptualized and having multiple encore

careers is becoming more common. Indeed, one might say that the whole concept of aging is being reinvented to reflect life-span perspectives. When do we start the aging process? Certainly, it doesn't begin at 65 or even 85. Does it begin at birth or maybe in utero (Figure 1)?

Perhaps the most perverse attempt to reframe aging is by considering it as disease. "Cure aging and live forever" is the line of anti-aging proponents who sell their approaches to ridding one of the "disease" of aging. Whether it be human growth hormone and its analogues or some reptilian-related ointment, one needs to watch one's pocketbook carefully when dealing with these facile vendors of false vitality.

These approaches are built on fear – the fear of growing old and dying. A program of brain health needs to challenge dominant perspectives that affect our brain aging. For example, we consider the dominant model of Alzheimer's disease to be a myth.⁸ Most experts do not believe Alzheimer's disease is a single condition, and many believe the brain aging processes we lump together as Alzheimer's disease are intimately related to aging. Hence, creating a program of brain aging becomes a way of preventing dementia. Moreover, it challenges ideas that Alzheimer's disease can be cured by simplistic notions of drug therapy.

However, our pro-aging attitudes require attention to biology. Here, we find increasing evidence that regular exercise is helpful to brain function. As one aspect of biological health, an exercise program can take many forms, but it should take a form that is enjoyable to the individual (and to groups of individuals) and allows one to accomplish a program of physical activity. Those who find exercising in nature with other people to be enjoyable, for example, are more likely to maintain a program if it includes nature and other people.

The other aspect of biological health is nutrition. Many claims are made that nutritional formulations ranging from antioxidants to anti-inflammatory agents, vitamins, and other potions help brain health. Most evidence suggests that eating a healthy, balanced diet composed predominantly of fruits and vegetables and free of pesticides and other toxins is probably the best way to maintain brain health through nutrition. Some recommend a Mediterranean type of diet with predominantly white meat like chicken and fish and healthy fats like those from olive oil. Eating low on the food chain (or following a vegetarian diet) and avoiding excessive or perhaps any red meat seems ideal from both a health and an ecological perspective. Sometimes vitamin supplements may be necessary, but naturally occurring sources of these metabolic constituents are probably ecologically and nutritionally best.

What Should Brain Health Really Be and Become?

Following the advice to maintain mental and physical health is an important aspect of brain health (Table 1). However, the brain serves many functions, not the least of which is to guide our lives down a journey of purpose.⁷ Why do we want to be healthy? Why do we want our brains to work well? Presumably, it is because we have things we wish to accomplish in life.

This exploration of our purpose is perhaps the deepest layer of brain health. The most complex parts of the human brain are the frontal lobes and related regions that perform the so-called executive functions. All human beings need to have a set of goals and a plan to achieve those goals combined with a process to monitor progress toward their objectives. Paying attention to issues that are core to one's life and avoiding unnecessary distractions are key components of brain health. Relaxation techniques, mindfulness, and meditation can assist this process as can guided imagery, which uses the imagination to visualize positive outcomes. Likewise, positive psychology concepts stress that focusing on strengths and affirming emotions is essential for enjoying a productive life. Another essential approach is narrative medicine, which recognizes that patients' histories are key to not only diagnosis but treatment. For many, it is one's life story that provides coherence and connection to others. Stories recount our past as we tell them in the present while wondering how to act in a way that creates our healthy future.

Executive functions are broad. Will, purpose, and meaning are associated with this set of complex human abilities. Importantly, the frontal lobe is intimately connected to portions of the brain that regulate emotions. These are some of the older parts of the brain that we share with our fellow animals. In a sense, the frontal lobe with its interconnected parts is the organ of wisdom that "decides" how to balance our motivations with our plan of action. It is simplistic to say that wisdom is located in any particular part of the brain and, in fact, one would be better served speaking of an embodied mind since our bodies, through hormones and other metabolic systems, can dramatically affect our thoughts and emotions. Another component of wisdom is to recognize the limitations of human thought since humility is a key aspect of wisdom. So, too, is compassion for self and others. The embodiment of brain reminds us to pursue the health of the entire body.

A Deeper Notion of Brain Health

We claim that our brain health initiatives and health practices should focus on the profound aspects that link the components of brain health by finding purpose and goals for our lives. This shift represents a deeper notion of brain health, with a holistic concept of what it means to be a healthy human being, and liberates us from a sole focus on the neurons and synapses that comprise our brains. It also has us attending to the ultimate limit, our own mortality. Ideally, everyone should contemplate their legacy – what do I want to leave as my accomplishments for future generations? When others remember us

NEUROSCIENCE NURSING PRACTICE CENTER

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The Neuroscience Nursing Practice Center is dedicated to the development and implementation of best practices in neuroscience nursing. Our mission is to improve patients' long-term outcomes by providing care according to the most advanced protocols based on the latest research findings, offering highly personalized care, and maximizing efficiencies during every stage of treatment. These strategies are implemented throughout the continuum of patient care from first diagnosis, through treatment, to follow-up visits in any location in which the patient is seen. Our program is based on three core principles:

- Evidence-based nursing practice
- Patient-centered care
- Relationship-based nursing

The Neuroscience Nursing Practice Center upholds a strong culture of patient-centered care that extends across every discipline, including rehabilitation, pharmacy, social work, nutrition, and medical services.

Key elements of a Healthy Brain program

Sense of purpose

Social engagement

Cognitive activity

Physical exercise

Healthy diet

General body function, including sexual health

Self-efficacy

Sustainability

Integrative approach to health

Table 1.

by our life stories, our social contribution extends beyond personal death. The deepest model of health should address an individual's spiritual and religious beliefs, if he or she thinks of life's meaning and purpose in those terms.

The Broader Aspects of Brain Health

Having considered the depth of brain health, what do we mean by the broader aspects of cognitive wellness? These aspects of our brain health program link us to community. As a neurologist, I often say that we don't think with just our brains; we, in fact, think with our entire bodies. However, what is not often appreciated is the importance of thinking with other people. Much of cognition is social. Even in physical solitude when reading a book or simply thinking about other people, we engage our thoughts with the thoughts that we imagine other people have. Especially in live conversation, we are thinking collectively (and often emoting together). The concepts of distributed intelligence and the wisdom of crowds capture the idea that we have a better chance of solving problems and creating opportunities together, though sometimes collective folly rather than group wisdom can result, depending on the circumstances.⁹

Let us remember that the health of our communities plays a large role in determining our individual health. Whether we eat healthy foods, exercise, or avoid contact with excessive amounts of pollution or neurotoxins depends in part on the structure of our built and natural environments. Social networking using information technology offers tremendous opportunities for enhancing our collective brain health. In fact, the creation of collective wisdom is critical to our adaptation and survival. No longer should we think of wisdom as the attribute of a few rare and often long-dead people. Brain health recognizes that we are all wise at times (and foolish at others) to varying degrees, but together we can all grow wiser. The opportunities for fostering mutual brain health are great.

The Next Level of Brain Health

So far, we have considered deepening and broadening our concepts of brain health, but are the two related? Depth may appear orthogonal to breadth, but ultimately they may be the same dimension, the same next level of brain health. Whether we have a sense of purpose adequate to drive our brain health activities to a deeper level depends in part on what we wish to contribute to our communities. Many sages have said that we are healthy as a function of putting other

people's needs before our own.¹⁰ It is enlightened self-interest to recognize that one's own health depends on the health of other people, and one's sense of purpose depends on connecting to the goals of other people. This broader notion of health that connects us as individuals to other human beings extends to the natural environment. In today's world, we recognize that global climate change is leading to changes in weather patterns and disease epidemiology.² For instance, warming contributes to the redistribution of species that can cause infectious disease, and it affects global crop yields and access to water. Thus, we are going to have to be smarter and more committed to each other to survive not just as individuals and communities but as a species that shares ecosystems with other life forms.

How Are We Developing a Model Brain Health Program?

Putting the patient first is an overused and worn expression that often has roots in serving the marketing needs of health care organizations and professions rather than serving people. But the truth of the expression is emerging as we increase our focus on prevention and "behavior change" as ideas that are critical to maintaining and enhancing health. Health is so broad that it requires knowledge from a variety of fields, including medicine, nursing, social work, and psychology. Hence, our program of brain health will involve these core disciplines and others like activity-related therapies and nutrition. We are working with professionals in family medicine, neurology, nursing, and social work to develop our pathways to health. With University Hospitals Neurological Institute as the lead organization, the program hopes to form around partnerships with the Francis Payne Bolton School of Nursing, Fairhill Partners, and other programs at University Hospitals Case Medical Center and Case Western Reserve University School of Medicine as well as community organizations. As such, we plan to continue to integrate research and service learning experiences into our clinical and educational programs for students.

We plan to base one aspect of the practice in The Intergenerational School, a public school that addresses the educational needs of children, adults, and elders. An intergenerational health practice can focus on individual and community health as well as blend medical and educational models of maintaining health.¹¹ Such a school-based health practice can enhance the role of the school nurse and participate in public health initiatives. Social workers will be involved to address family needs and community resource issues. Psychologists will be available to assist with assessment (clinical psychological and neuropsychological) and treatment.

Yet it is a new model of health coaching that we will incorporate that sends the strongest message about our philosophy of care (Table 2). A coach is a helper, but it is the player (the patient/client) who "competes" in the grand Olympic sport of life. The coach works by sharing expertise as needed, guiding experiences at different levels, and fostering skill development on the way to better performance. The mentoring relationship is key. It is the health life story and the mental images of success that the coach and player co-construct that allows success. As in sports, health emerges from this relationship-based, narrative, holistic practice that is rich with the image of success. With appropriate expert input, health coaching can provide knowledge that ranges from genetic and environmental risk to incorporating so-called complementary and alternative medicine practices. Though always aspiring to evidence-based best practices, an intergenerational practice recognizes the limits of purely data-driven decision making and values the wisdom of collective experience. Planning for the end of life will be appropriately considered earlier than is often the case in health care, as the sages tell us that embracing and planning for our own mortality and legacy can be a part of making life vital and purposeful.

Putting Brain Health Into Collective Action

In Cleveland, we launched our Healthy Brains Healthy Communities Initiative with a keynote speech by Dr. David Satcher, the first African-American surgeon general of the United States and former head of the Centers for Disease Control (Figure 2). This distinguished graduate of Case Western Reserve University has been focusing on the health of children in schools. Our initiative is being conducted in partnership with other health care organizations as well as innovative learning schools. We believe that public schools are an important source of information for young people to begin on a path of brain health and to maintain lifelong learning as a value throughout their lives.

One leading school is The Intergenerational School (TIS), a high-performing, urban community school at Fairhill Center founded by Cathy Whitehouse, myself, and others.⁵ TIS is a charter school whose mission is to empower students of all ages to be lifelong learners and spirited citizens. We emphasize experiential learning through community service and create developmentally appropriate educational opportunities for children and elders with cognitive challenges. International, national, and regional recognition has followed as data and stories have demonstrated the value for the school. The school is an organizational innovation that improves public education for kids and creates opportunities for adults, especially elders, to find a meaningful place in the community and to develop a profound sense of legacy. Recently, we conducted quantitative (randomized controlled trial) and qualitative research demonstrating that the school has a positive impact on older volunteers from a local residential facility (Judson Smart Living Community) who have dementia.⁶ Hence, our school provides life-enhancing value for learners of all ages in the school, not just the approximately 200 urban children educated there.

We are expanding our brain health activities into the outdoors by working with The Nature Center at Shaker Lakes. Figure 3 shows our award-winning Environmental Protection Agency project (<http://www.epa.gov/aging/resources/thesenseofwonder/2009/finalists.html>) sharing what Rachel Carson called a sense of wonder about natural systems as we learn about them. Eventually, we hope to have an urban farm associated with our intergenerational brain health practice.



Figure 2: Launching Cleveland's Healthy Brains Healthy Communities Initiative on May 18, 2009, with Dr. David Satcher and leaders of local innovative schools and health-oriented community organizations, including (from left to right) Elizabeth Fiordalis (Cleveland Clinic Foundation), Mary Anne Vogel (St. Martin de Porres High School), Brian Driscoll (The Urban School), Perry White (Citizens' Academy), David Satcher (Morehouse School of Medicine), Catherine Whitehouse (The Intergenerational School), TJ McCallum (Case Western Reserve University), and David Wright (The Nature Center at Shaker Lakes). The conversation was moderated by Peter Whitehouse (University Hospitals Neurological Institute and Case Western Reserve University). Photo by Peter Whitehouse.

Features of Health Coaching

Places the player (i.e., the patient) first
Is relationship-based
Creates stories and images of positive outcomes
Is practiced by laypersons and the patients themselves
Is purpose driven and goal oriented but reflective
Takes incremental steps and plans long-term outcomes
Pursues continuous quality improvement
Allows access to expertise as needed, e.g., genetic risk
Values aesthetics and artistic expression
Is integrative-holistic

Table 2.

Conclusion

For 10 successful years, we have been prompting this deeper and broader concept of brain health, and we are now joining with like-minded schools, such as the Schools That Can network of high-performing urban schools committed to education of the public. The notion that public schools are a wellspring of energy for improving individual and community health is prompting the University Hospitals Neurological Institute to have one component of its Brain Health Program located in our school. As these programs unfold, we look forward to planned programs at University Hospitals Ahuja Medical Center and to making our contributions to the international conversation about brain health. Brain health, deeply and broadly conceived, is essential to who we are as individual mortal human beings, to what fosters a sense of belonging in our communities, and to how we will face the future ahead. Adding why to this equation is essential. As for where and when, the answer is here and now.

Peter Whitehouse, MD, PhD, is a consultant for SeniorBridge, a geriatric care management company based in New York. This relationship has not affected the content of this article.



Figure 3: Adults and children from The Intergenerational School share a sense of wonder about nature while learning about water systems at The Nature Center at Shaker Lakes. Photo by Peter Whitehouse.

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