

Audience: *Nutrition professionals and/or leaders responsible for positively impacting the nutritional health behaviors of a defined population (i.e. a community, workplace, school).*

Educational Strategies for Change: The Power of Food Choices in Health & Disease

The purpose of this article is to outline effective strategies for implementing dietary behavior change within groups that optimizes the long-term health of the population. There are three equally important areas of consideration; education, motivation and on-going support. In the book, *Switch: How to Change When Change is Hard*, the authors found that most successful changes share a common pattern. The pattern involves the leader of the change addressing the rational mind with education, the emotional mind with motivation and aligning the environment so that positive change is the path of least resistance. I would also add that the implementation of this pattern is not a linear process, but requires ongoing evaluation of these three areas. (Heath & Heath, 2010)

Educate the Rational Mind

Education can occur on many levels and is vital for change, especially when there is a lack of understanding or misconceptions regarding basic issues. Since the 1940's, the role and importance of nutrition in human health has been obscured by the focus on pharmaceutical science and genetic determinism. This has only recently begun to change and therefore accurate information from a trusted resource is in short supply for the average lay person. This is exacerbated by the specialization within the medical community that leaves little interaction with a primary health provider. In most cases, the medical profession also lacks training in the areas of diet and lifestyle modification that is appropriate for the individual health issues requiring adaptive change. This is a significant barrier to change in that a lack of understanding and acceptance of the role of nutrition in basic health issues traps individuals in a cycle of self defeating behavior.

Understanding the role of epigenetic influence and the role of chemicals, both food and environmental, on gene expression is the first area to address with the group. This allows

individuals to accept the role that they play in their own health and can be a motivator to learn and change habits for some. Next, based on the findings, what are primary prevention strategies? Finally, when it comes to food, there is also a need for practical skills such as where to get it, how to prepare it and when to eat it.

Eclipsing of genetics with epigenetics

In the late 1980's and 1990's genetic research was all the rage. The project to map the human genome created great expectations that disease would be eradicated if we could only find the gene that drives each disease and create a drug that would fix the broken gene. Epigenetics and the study of the epigenome is a relatively modern area of study in the field of microbiology. The term was popularized in the 1990's after the human genome project failed to prove the primacy of DNA, the basis of genetic theory, and thus pointed to the need to further study the influence of environmental factors in the activation or deactivation of obvious genetic tendencies. Epigenetics refers to the model of how genes interact with their environment and how genes behave when their environment changes. (Lipton, 2008) (Lipton, 2006)

Since Watson and Crick discovered DNA in the cell nucleus in 1953 science has primarily focused on genetics as the answer to disease. It was theorized that due to the complexity of the human we would find over 100,000 genes in the genome. It was thought that if we could simply map the genome we would discover the answer to all genetic tendencies. Enterprising venture capitalists funded the research, thereby securing their rights to patent the process for turning these genes on or off and eliminating disease forever. However, what was found is that humans actually have about the same number of genes as fish or mice and fewer than plants! It begs the question, "What explains the complexity of the human if it is not genes?" (Holt & Patterson, 2006; Lipton, 2006)

If we look back further in history, we find several researchers in the 19th and 20th centuries who understood that environment, and nutrition specifically, had a great influence on the activation or deactivation of genetic material in the development of cessation of disease states. Dr. John Beard (1858-1924) discovered the trophoblast theory of cancer and observed that pancreatic enzymes had a large role to play in the development of cancer. What he specifically observed is that the trophoblast grew until the embryo began to make pancreatic

enzymes and then it went away. He theorized that a cancer tumor is a trophoblast that is environmentally activated and that the sufficiency, or insufficiency, of pancreatic enzymes is the critical factor in growth or control of the tumor by the body. Dr. William Kelly and Dr. Nicholas Gonzales continued this work into the 20th century and up until today further observing in clinical practice that certain metabolic types have an abundant source of pancreatic enzymes while others do not. This also brings in the role of stress in disease. By typing their patients and customizing their diet they were able to see great results in halting the progression of terminal cancers. The addition of pancreatic enzymes further supported the destruction of the tumors. (Gonzales, 2010; Gonzales & Isaacs, 2009)

Another line of research occurred in the early 20th century and published in the classic nutrition book, *Nutrition and Physical Degeneration*, Dr. Weston A. Price, DDS. Dr. Price spent over a decade travelling the world in search of indigenous populations untouched by modern food supplies. Repeatedly he found that the indigenous tribes maintained excellent health as long as they ate their traditional diets. Being concerned about dental caries first, he noted the dramatic differences among isolated and modern communities. Among the Swiss, the traditional groups had incidence of 0.3-5.0% of the teeth being affected while the modern groups suffered with incidence ranging from 90.0-100% of the population suffering with dental caries. With this loss of immunity to dental caries came a loss of immunity to other disease such as tuberculosis and increased incidences of abnormal facial developments with narrowing of the arches and mouth breathing common. This principle of eating traditional diets to improve health has been researched many times over in recent decades showing that health does improve on traditional diets. (Lipski, 2010; Price, 2008)

Dr. Royal Lee, DDS, working at about the same time as Dr. Price in the time of 1920-1950 also saw the importance of nutrition in the prevention and healing of a wide variety of health problems. Today we may label this as the epigenetic effect of nutrition on disease, but in his day he simply found that whole foods had health benefits for a wide variety of ailments and injuries. In his newsletter, *Vitamin News*, he spent many years documenting the clinical use of whole food nutrition in the treatment of heart disease, injury, insomnia, diabetes, hormonal imbalance, thyroid problems and more. (Lee, 2006)

In the 2006 DVD, *Ghost in Your Genes*, the role of nutrition as part of the environment is summarized through the work of Marcus Pembry, a geneticist based in London, in his studies of the connection between nutrition and disease. Through studying the records of births, deaths and harvests in a remote Swedish village, he discovered startling information about the role of diabetes and diet as reflected beyond the generations. He discovered correlation between paternal grandfathers and grandsons related to the food supply of the grandfather in late childhood. If there was an abundant food supply in late childhood, the grandson was four times more likely to develop diabetes and experience a shortened lifespan than if there was famine. This pattern was seen with sons, but was most pronounced in the second generation. He also discovered a correlation with female lines, but unlike the late childhood influence of males, the daughter was primarily affected by the diet in utero. It seems that the genders have a different time period for sensitivities to trans-generational imprinting. (Holt & Patterson, 2006)

The evidence continues to mount regarding the role of epigenetic influence on disease. A recent 2008 study by Dean Ornish, MD demonstrated the role in nutrition, exercise and meditation in shutting down the genes that are responsible for prostate and breast cancer. The nutritional program specifically focused on whole grains and vegetables. In a 2007 study at MD Anderson Cancer Center, curcumin is shown to down regulate the genes that promote tumor growth and up regulate the cancer inhibitor genes. This study examined many types of breast and prostate cancers as well as leukemia, lymphoma, head and neck tumors and lung cancer. A 2008 study in the UK shows further benefit of curcumin on the oxidative damage caused by cigarette smoking. It was shown to up regulate the genes that enable the lungs to make use of steroid function in patients with COPD and asthma. Curcumin is a spice typically found in Indian cuisine and is a principal component of turmeric. Finally, a 2007 study showed that nutrients containing methyl donors like folic acid or the phytoestrogen genistein were able to counteract the negative effects of bisphenol AA (BPA) on the developing fetus. (Aggarwal et al., 2007; Dolinoy, Huang, & Jirtle, 2007; Meja et al., 2008; Ornish et al., 2008)

Even more astonishing is a 2009 study confirming the role of transgenerational epigenetics in disease. Transgenerational epigenetics is the ability of an environmental factor to promote a disease state not only in the person exposed or the fetus in utero but to their future children

and potentially future generations. These are not physical changes to the DNA, but an activation of a genotype by an environmental factor such as food or toxins that has positive or negative disease state influences and is passed on through the germline. (Skinner & Guerrero-Bosagna, 2009)

These modern studies and history of research make a compelling case for the role of environment, as defined by the whole input in a person's life, influencing the genome for health or disease. At its best, epigenetics empowers us to take charge of our health and refocuses basic research on the role of nutrition and other environmental factors to positively impact the epigenome. As the Stanford University School of Medicine cell biologist and author Dr. Bruce Lipton writes,

In the last decade, epigenetic research has established that DNA blueprints passed down through genes are not set in concrete at birth. Genes are not destiny! Environmental influences, including nutrition, stress and emotions, can modify those genes, without changing their basic blueprint. And those modifications, epigeneticists have discovered, can be passed on to future generations as surely as DNA blueprints are passed on via the Double Helix. (Lipton, 2008)

Practical Primary Prevention

With the goal of developing effective strategies for implementing dietary behavior change within groups that optimizes the long-term health of the population, the education on epigenetics needs to be followed with specific training regarding food choices that an individual can put into practice immediately. There is a great deal of conflicting and confusing information from the research world that is then translated to articles, books and websites for the general public. In order to be effective in change, the group needs to identify the key factors in a healthy diet that can be agreed upon and also understand the concept of biochemical individuality that needs to be considered on an individual basis for those who are experiencing less than optimal results. (Williams, 1956)

Eat Real Food

Traditional foods, those that were available before mass produced processed foods were on the market are the healthiest choices. These foods are purchased in the whole state and processed only by cooking and preparing freshly. These include vegetables, fruits, fish, meats, eggs, nuts, seeds, whole grains, minimally processed cheese and yogurt and generous use of onions, garlic and spices. (Schmid, 1997)

Eat 5 Vegetables and 2 Fruits/day

The nutrients in vegetables and fruits have been shown to boost the immune system, improve the ability to detoxify more effectively and support the gastrointestinal system. The important factor is to focus on eating more portions and a wider variety of vegetables and fruits. (DeBusk & Joffe, 2006)

Small Portions of Fish, Meats, Eggs

The key with protein sources is to eat enough, but not too much. At a normal activity level, an individual needs about half their ideal body weight in grams of protein per day. With that in mind, a small portion that is the size and thickness of your palm is likely all that is needed two or three times per day. Most people do well with a larger breakfast including protein and smaller meals as the day progresses.

Minimize Processed Foods and Sugars

Processed foods that contain chemical food additives, high sodium levels, hydrogenated oils and sugar are not supportive to a balanced healthy diet. This includes packaged foods, fast foods, candies, desserts and sodas. Many people are highly sensitive to these foods due to chemical, sugar or specific food intolerances. These should be avoided for improved health. (Stitt, 2004)

Skills Education for Clarity

The rational brain needs specifics on what to eat, where to get it and how to fix it. When it comes to food, hands on education is the best way to teach any group. “Show and tell” for food products can be a very effective way to engage the audience and create more interaction between the teacher and the group. A guessing game of common food labels is an effective way to make the point of real foods vs. food additives in processed foods. A field trip to the local grocery store or farmers market and cooking classes on preparing core foods allows

people to immediately put the new information to use. The creative use of technology to support this effort through videos and daily reminders for those who cannot make the field trips broadens the reach of the program.

The same strategies can be used with the influence of environmental pollutants and other environmental factors. In addition, clear and practical instructions should be given on what not to use and clear choices for replacement products provided. This applies to cleaning supplies, body care products, laundry supplies, water filters, yard and gardening supplies, pest control, remodeling products and more. An expert point person could play the role of engaging local businesses in the community to spearhead presenting healthier choices, thereby supporting employees while encouraging change in the community retail outlets.

Motivate the Emotional Self

The power behind any change is harnessing the emotional resolve of the individual involved in the change. The rational mind is amazing for learning, analyzing and developing strategies. However, strategies are not goals. They are action plans to meet goals. Strategies are ideas that will certainly work if only they would do them consistently. So, what is the roadblock that keeps people from carrying out our strategies? Typically it is a lack of clarity about the true goal. Knowing the true goal allows the individual to see the value in changing behavior and often gives the motivation needed to harness the emotional power to change. (Marshall, 2009)

In terms of motivating groups to make positive changes in eating habits, it is imperative that we support each individual in finding their own motivation through helping them clearly see their goal. Effective coaching that focuses on the intrinsic creates an environment where best thinking can occur and best thinking accomplishes change. (Marshall, 2009)

Typically, people think they want something measured by external factors; money, weight loss, lower blood pressure, a better relationship, etc. A skilled coach who is focused on the intrinsic and coaching for clarity can help the individual discover that what they are really wanting is the feeling behind the external factor; peace, freedom, joy, love, etc. This revelation of what is really important elevates intrinsic thinking to a place where it informs the extrinsic strategies. Often this clarity propels the individual forward toward the true goal (freedom) accomplished by the strategies of changed eating habits and exercise that actually

results in weight loss and lowered blood pressure. Without the intrinsic informing the extrinsic, people are simply developing strategies that they typically lack motivation to enact and, most importantly are creating stress rather than reducing it. (Bedell & Kaszkin-Bettag, 2010; Loyd & Johnson, 2010; Marshall, 2009)

In a group, harnessing the emotional power involves setting a goal that most everyone can agree has valid intrinsic value. This is followed by giving the group a very specific series of actions that can lead to the accomplishment of the goal. The effectiveness of capturing the emotional energy of a group to accomplish a worthwhile goal has been documented many times. One such business example is documented in the book, *Switch: How to Change When Change is Hard*, by Chip Heath and Dan Heath. The Institute for Healthcare Improvement recognized that the defect rate in hospital care was shockingly high and that by applying rigorous process controls such as those in other industries, the rate could be improved. To capture the emotional attention of the group of hospital administrators attending a conference, the owner announced that IHI intended to save 100,000 lives in the next eighteen months. Within two months more than a thousand hospitals had signed up. IHI supported the hospital groups in implementing six very specific interventions that allowed them to exceed their goal by twenty per cent and institutionalize changes that continue to support improved health outcomes. (Heath & Heath, 2010)

Why the need to harness the emotion and develop the intrinsic in the people with whom we work? The bottom line is that actions are often driven by emotions and emotions are often subconscious. Uncovering what an individual really wants can open up a great deal of new thinking about how to get there. It adds clarity and clarity focuses action like a laser beam. According to Dr. Bruce Lipton, the subconscious or unconscious mind is 1,000,000x more powerful than the conscious mind. In fact, he goes on to say that cellular (or sub/unconscious) memories actually set patterns in place that run most of your life. This research from the perspective of a cellular biologist is substantiated in many other fields. Dr. Robert Hartman found that we have a fault in our thinking that causes us to filter the world around us based on these set patterns or paradigms and not on the actual situation. (Lipton, 2008; Marshall, 2009)

Dr. Hartman believed people have a fault in their thinking that makes them value their ideas about things more than the reality of the thing itself. His

conclusion was derived from his observation. Brain studies have since confirmed his conclusion: When we interact with the world around us in ways that confirm what we already think, pleasure centers of the brain tend to be activated and reasoning activities of the brain tend to turn off.

Conversely, pain centers in the brain are activated when we explore new thinking, and our avoidance is enough that we'll tend to avoid it even when the new thinking takes only a few seconds to consider.

This new thinking is intrinsic. It is the ability to look at the situation in terms of true goals rather than the built in patterns that run daily life. So few people are able to do this because it actually activates pain centers in the brain and therefore they avoid it. (Marshall, 2009)

Research has also shown that there is a limited amount of self control. This is not simply resisting the candy on the receptionist's desk. Self control involves any activity that takes a person out of the normal, automatic behaviors of the day and requires them to use their rational mind to think or govern the task. Any change falls into this category but so does conducting a contentious meeting, studying a new topic, planning an event or writing an article. If an individual is exerting this type of control in one area for much of the day, they will find that they are less likely to enact positive changes in eating habits because they simply lack the mental and emotional resources to exert self control in one additional area. (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Heath & Heath, 2010)

The Heath's also found in their research that what looks like resistance is often a lack of clarity and what look like laziness is often exhaustion. In other words, the rational mind has no clarity on what the emotional mind is really wanting and so it has two choices; resist external pressure to change or succumb to the pressure and spend a great deal of energy analyzing and developing strategies to accomplish an external goal. Either way, failure over the long term is likely. This is due to the simple fact that when the head (rational mind) and the heart (emotional mind) conflict, the heart almost always wins. (Heath & Heath, 2010; Lipton, 2008)

Finally, the cellular memories in the sub/unconscious can sabotage any efforts toward positive change if they are inaccurate pictures of the world that leave individuals stuck in destructive patterns. This is the newest area of research and perhaps the most important in providing

answers for individuals stuck in minor or more serious destructive patterns. Emotional memories are stored in the amygdala and hippocampus, deep in the ancient brain. These deep memories of how a person responded when certain things happen are coded within earliest memories occurring before birth, as a young child and even transgenerationally. In addition, we have now learned that the memories are not only stored in the brain, but they are also stored on the brain of each cell – the membrane. This is the likely the reason a simple memory can trigger dramatic physiological stress throughout the body in an instant. The cellular memories have been coded to respond since the first time the memory was experienced. Again, this is not a change in the physical genetic code, but an epigenetic alteration. (Holt & Patterson, 2006; Lipton, 2008)

These memories that are in conflict with what the rational mind wants to accomplish create an imbalance in the autonomic nervous system resulting in physiological stress. In contrast to circumstantial or situational stress, physiological stress is almost impossible to identify without measurement tools such as Heart Rate Variability. Someone may appear calm and even say they feel calm and yet HRV will detect significant physiological stress. This subconscious stress keeps the individual in a state of emotional reaction rather than logical thought because the subconscious mind is a million times more active than the conscious and the subconscious is in the realm of the emotional brain. (Lipton, 2008)

Practically, this has tremendous implications for health & performance. Physiological stress is the underlying cause of 90%+ of disease. The simple reason is that you cannot be in a state of stress and a state of healing at the same time. Remaining in a state of stress for prolonged periods of time disables the immune system and leaves you open to disease. Physiological stress also prevents the individual from operating at optimal brain capacity, impacting performance when logical thinking is required. Without the ability to think rationally and logically, you simply react and ability for creativity and higher thinking is reduced. (Bedell & Kaszkin-Bettag, 2010; Bradley et al., 2010; Lipton, 2008; Rollin, Atkinson, & Tomasino, 2003)

Strategies for groups that would help harness the power of the emotional mind are:

1. Leadership sets goals for the group utilizing as much input as possible from a wide range of areas. Goals should have an intrinsic value. Focus on emotional drivers around what it will feel like when we get to the goal.
2. Support each person finding their own intrinsic motivation by educating on stress free goal setting and further individual support through individual coaching that supports their intrinsic awareness. Coaching, done in an intrinsic way that gets into the heart of the issue and brings clarity to the individuals thinking, is a powerful tool to leverage other change efforts. Motivation happens one unique person at a time in one unique moment at a time. (Marshall, 2002)
3. Highlight stories of bright spots of success within the group. Individual success or smaller groups working together for success. Again, focus on the emotional feeling of success.
4. Recognize that the subconscious is often in control, educate on it and teach new skills to support cleaning up these cellular memories. In addition, support this effort through coaching.

Supportive Environment

In an effort to change group behavior, the degree of success in aligning the environment so that positive change is the path of least resistance will greatly impact individuals within the group. In any group there are social and cultural environmental factors that strongly influence group behavior. Cultural practices of the group, public policy around group behavior and the built environment (physical location of food sources) pre-determines food decisions for many. For example, if the cultural norm in a work environment is to order in pizza because it is expected that employees work through lunch and there are few options in the area for food, then that is the pattern that most employees will accept. However, an alternative would be for the company to set a different public policy around lunch, encouraging employees to go outside and walk around the track to clear their minds and then enjoy a healthier box lunch ordered from a local catering service for those who want them at the picnic tables under the trees with colleagues. While the issue is unique for each group, the reality is that people can only eat what is available and accessible to them in the timeframe they are given to eat at a price they perceive they can afford. (Contento, 2011)

The social and physical environment play a great role in any group change. The structure of the change effort also plays a critical role. The model for structuring effective wellness plans used by the Wellness Council of America is time tested over two decades with more than one thousand companies. (Hunnicuttt & Leffelman, 2006)

1. Senior leadership support
2. Create a cohesive wellness team – from all areas and different levels of influence in the group.
3. Collect appropriate data – both cultural and clinical- to drive health efforts
4. Develop an operating plan for change considering goals and budget
5. Choose appropriate interventions based on the unique group
6. Create a supportive environment
7. Evaluate progress regularly

The change effort is an on-going process that involves education, motivation and supportive environmental changes on an on-going basis. The team approach allows for broad based input and more likely acceptance if the team is given clear guidelines and support from leadership. Empower the team to find simple, clear, small strategies that engage the group and provide quick success. Also, look for bright spots that are already within the group and consider allowing those people to spearhead change in that particular area. As an example, if there is a subgroup who manages to fit in five or more servings of vegetables and fruits per day, explore how they accomplish that and decide if their strategies are duplicable. (Heath & Heath, 2010)

Finally, build gradually. As a professional working with the group, strive to develop a long term relationship with the group as a consultant but recognize that the change needs to come from within the group. Set achievable goals in the first year that build confidence and create momentum. Go deeper in year two and three and continue to bring along late joiners and new arrivals to the group. Celebrate successes, big and small, and enjoy the satisfaction that accompanies changing lives for good.

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