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The article by Dr. Mark S. McIntosh is based on his respective talk at the American Society for Nutrition Satellite Symposium at the Annual Meeting of Experimental Biology on April 23, 2010, in Anaheim, CA, entitled, "Emerging clinical applications of diet and supplemental phytochemicals for metabolic syndrome and obesity".

A Clinician's Perspective on Incorporating Therapeutic Lifestyle Change into Clinical Practice

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Abstract

This article describes the unique perspective of a clinician who was originally trained as an acute care specialist but in recent years had the opportunity to witness the positive impact of therapeutic lifestyle change (TLC) programs in managing chronic diseases. Through experience gained from conducting a multi-center clinical trial investigating the effects of TLC program in people with metabolic syndrome, Dr. Mark S. McIntosh discusses various aspects and challenges pertinent to implementing a successful TLC program. Patients, physicians, lifestyle counselors, work places, and home environment are all critical in forming an alliance for transforming the current sick-care approach to preventive, wellness-focused approach that is far more efficient, rewarding, and financially sustainable.

Introduction

Having the opportunity to work both as an acute care specialist in the Emergency Department (ED) of a Level I trauma center as well as the newly appointed Employee Wellness Director in an institution with more than 5000 employees, I possess a unique vantage point from which to observe our health care system. During every shift in the ED I treat patients who have made lifestyle decisions that placed them at greater risk of injury and positioned them on a dangerous path towards chronic disease. The World Health Organization has declared that chronic diseases are the leading causes of death worldwide, largely attributed to 3 preventable risk factors: physical inactivity, unhealthy diets and tobacco use [1]. The healthcare system in the US has an excellent performance record for treating acute disease, though prevention and management programs for chronic conditions have not been as successful. Daily I feel that I am at the bottom of the cliff desperately trying to treat people suffering from chronic, lifestyle-driven conditions while hoping that someone at the top of the cliff will build a protective guard rail. From my perspective it appears that this guard rail will never be built until we transform our "sick-care system into a "health care system."

Sick-care system

Rachel Remen described a population of physicians who feel unfulfilled and cynical due to the stresses of working in the medical field, and admonishes a medical training system that focuses solely on professional skills to the exclusion of personal connections. In order to "recapture the soul of medicine" and restore their commitment to service, physicians must be re-educated so that they find meaning in their work every day [2].

Despite spending a greater percentage of GDP on health care than other industrialized nations, the US lags in medical outcomes and in key performance metrics such as patient safety, effectiveness, efficiency, equity, and patient-centeredness [3]. The inefficient healthcare system also places a financial burden on patients, such that 62% of personal bankruptcies in the US in 2007 were attributed to medical bills [4]. The need to transform the current healthcare system into a wellness-focused approach has been recognized by many experts. Dee Edington's popular book, Zero Trends [5], describes in economic terms the impact of escalating healthcare costs and

decreased productivity. Richard Adler, MD, applied the Peter Drucker's S-curve theory for business innovation as a forecasting model to the US healthcare system [6], suggesting that our current system is in a state of discontinuity, and will require a new approach in order to meet the needs of the population. Fixing this "illness system" will tilt the precarious balance among cost, quality and population coverage. Increasing the quality of care or establishing coverage for 47 million uninsured will result in the burden of increased costs. Under our current measure of quality and given the current state of healthcare economics, optimization of all three cannot be resolved. What we need is a new system founded on wellness and prevention initiatives, with a new measure of quality, and driven by economic principles that provide rewards for the prevention of illness.

Inspired by a dietician

I was at a medical conference several years ago when I had the opportunity to share a bus ride with Barb Schiltz, RN, a nutritionist from Metagenics, Inc. Having spent the last 20 years in a "curative medicine" mindset, treating ill patients and bemoaning the fact that I did not have a single class in nutrition, I was willing to listen. During that bus ride I was introduced to the concepts of glycemic index and glycemic load, and enlightened about the impact of therapeutic lifestyle change (TLC) programs. TLC encompasses lifestyle behavior, dietary habits, and exercise plans, and has been effective at modifying risk for type 2 diabetes [7], cardiovascular disease [8], and metabolic syndrome [9]. TLC is recommended by AHA as the first line of therapy for managing cardiovascular disease and risk factors such as high cholesterol, and is the cornerstone of prevention for children and healthy adults [10, 11].

My brief exchange with the nutritionist was truly an epiphany for me, allowing me to see the potential for transforming patients' lives. I returned home to Florida and almost immediately recruited friends and family members to put the concept to a personal test. In short, teaching patients to "eat correctly" resulted in true transformation in the lives of those who made the efforts to change. That year, I gained a newfound passion and an opportunity to be a lead investigator in a multi-center clinical trial to study the effects of implementing TLC with patients.

Study Perspective

As a lead investigator for a clinical trial (the trial was registered at clinicaltrials.gov as NCT01010841) examining the effects of a TLC program on symptoms of metabolic syndrome, I gained an appreciation for the difficulties that must be surmounted to identify appropriate populations needing help, the extent of resources required to educate and motivate these populations to affect change, and the roles of the practitioner and healthcare system in supporting the necessary changes in patients' lives. The intervention program used a low-glycemic-load, modified Mediterranean-style diet, and compared the effects of the diet with or without supplementation of soy-based medical food.

Lessons Learned

High demand for solutions that work. Encouragingly, advertisements for our study received tremendous response, and we screened over 500 women to identify those who met the criteria for metabolic syndrome. Subjects were motivated to participate in weight management programs, and the concept of modifying their lifestyle with a TLC program rather than simply going on a diet was embraced. Many of them had failed on fad diets and were seeking long-term success. It is not surprising that, with the widespread prevalence of metabolic syndrome and obesity, many patients are looking for solutions and resources for their health-related problems.

Patient education as a powerful motivator. In 21st Century US, the majority of the population works full time outside of the home, leaving little time to prepare meals. Almost all the women participating in the study were employed full-time. In 2009, 75.6% of US women between the ages of 25 and 54 were in the workforce [12]. Establishing a TLC program is time-consuming as it requires following a disciplined food plan and reserving time for meal planning, food shopping, and meal and snack preparation. In our study, it quickly became clear that patient education is a powerful motivator. Patients were encouraged to plan ahead for healthy eating

with tips like planning for breakfast the night before and preparing snacks to take on an outing, and resources such as recipes and food selection guidelines were provided.

Time management for success. Another obstacle to TLC is an issue that pervades modern society, which is the tendency to schedule every minute of every day with activities, leaving no margin in one's life. This is a concept eloquently presented in the book, Margin, by Richard Swenson, MD [13]. Patients encountered in the study had tremendous responsibilities, including work, school, children, and home maintenance. Incorporating lifestyle modification was challenging for these individuals due to the time commitment necessary for meal planning and preparation, and even more so if they were to establish an exercise regimen. As such, the stress experienced by the patient impacted their success in the program. To counteract feelings of being overloaded, it was critical for patients to understand that work life balance is essential to wellbeing. I literally gave some a prescription to schedule "margin" into their lives. Ideally, if one's schedule is only 80% full, then flexibility exists so that inevitable life interruptions can be managed instead of creating an unbearable source of stress.

Availability of healthy food is critical. Access to healthy food was problematic for some study participants. The study population was not affluent and local access to appropriate, affordable food choices was limited. Patients frequently complained that healthy foods were expensive. For example, fruits and vegetables are significantly more expensive than processed snacks like chips [14]. There was a lack of specialty grocery stores offering healthy foods in neighborhoods where the subjects lived. Furthermore, it is very difficult to follow a low-glycemic-load Mediterranean diet if the majority of meals are eaten in restaurants or fast-food establishments. The study's approach to these potential setbacks was to teach subjects how to best use what was available to them. Subjects were taught to shop the perimeter of grocery stores for whole-food choices and to read labels of products. Maps to local farmers' markets, retailers of health foods, and restaurants offering healthy choices were provided to subjects to encourage shopping for healthy foods. Tips about food selection when eating out were supplied to subjects as well.

Night shift workers face multiple challenges. Study participants who worked at night had an added challenge in order to stay compliant. Night shift workers had more time constraints and less access to healthy food choices than those working during the day. Food choices in the work environment were frequently limited to fast food and vending machines. High fat, high carbohydrate foods such as donuts, pizza, soda, and chips are the mainstay of the "night culture". Because the work environment did not offer healthy food choices, snacks and meals always had to be brought from home. Many of these participants also had disrupted sleep patterns as they tried to balance family life with working at night. Consequently, tremendous discipline was required by these individuals in planning their time and preparation of meals.

Supportive home environments can multiply success. One of the potential barriers to lifestyle change revealed by the study was the reception of TLC in the context of the family dynamic and relationships. Success of a TLC program is often dependent on support from family members. Interestingly, on several occasions the patient reported that their partner was likewise participating in the program and often seeing great progress in his or her own health with decreased weight loss, more energy, and increased level of exercise (for those not in the study). Conversely, family members of other patients were adversarial and on occasions would try to sabotage efforts of the participant. In the study, we encouraged family members to attend appointments with the participant so as to explain the goals and guidelines, garnering their support. In fact, I suspect that an inclusive approach to family would be an even more effective strategy for TLC programs, producing healthy home environments, inherent support systems, and engendering in children healthy lifelong habits.

Sensitivity to ethnic and cultural diversity. As we in the medical community focus on which foods are most important for optimal health, ethnic and cultural diversity becomes an important point for consideration. The typical diet of our study population as revealed by food diaries included high calorie, high fat intake. Subjects were not used to eating whole grains, fruits and vegetables, legumes, and nuts. The low-glycemic-load, Mediterranean diet was a drastic change for many, and required new culinary skills and, as many suggested, "a new palate". Subjects

found it difficult to give up creamy sauces, breads, and southern iced tea. To combat food traditions replete with high carbohydrates, fried, fatty foods, and sweetened beverages, patient education was a highly effective tool. Most participants began the study with a very limited food repertoire, but after expanding the types of foods in their diet they saw that it was possible to follow the dietary food plan. Frequently this involved trying new foods; for example, at the start of the study, many did not know what whole grains were, or how to purchase them. Once patients understood the role of phytonutrients in health, and could identify foods containing "good fats", they became motivated to eat a variety of fruits and vegetables, legumes, and nuts. Simply eliminating soda from the diet resulted in a significant decrease in carbohydrate intake. While dialogue is ongoing with regard to the types of diet that are best for human health, clearly identifying a diversity of healthy foods that can be integrated easily into ethnic traditions or cultural lifestyles will improve reception of and adherence to lifestyle changes.

Managing psychological issues. A more complex challenge to instituting a TLC program has to do with the layers of psychosocial issues surrounding food among American populations. Many subjects in our study ate food to cope with stress, or gravitated toward certain "mood foods" associated with different emotional states. Food often was used for desensitization during stressful times. There were concerns by husbands and significant others that the subject's weight loss may impact their relationship. Traditional celebrations and family gatherings often center around food. In the work environment, administrative rewards and social gatherings have a focus on food – most of which would not be allowed on any TLC food plan. For instance, team performance may be rewarded with a pizza party or donuts brought in by team leaders. Minimizing psychological associations with food may require multiple approaches, and cognitive behavior therapy may be useful here. Re-training individual habits requires education, self-discipline by the patient, and supportive home and work environments. Our study participants were encouraged to seek support from family members as well as from co-workers.

Effective one-on-one counseling. One-on-one counseling about food selection and characteristics of a healthy lifestyle was an integral part of the study and proved to be a very effective strategy

for adherence to the program. Individuals with little time and money resources have inherent challenges to adopting TLC. Throughout the study, I interacted with patients who wanted to make changes and were willing to make the effort to learn new habits, but societal conditions are currently stacked against many of these individuals. Some simply do not know how to get started making the lifestyle changes that are necessary. In the study, we stressed to patients that the TLC program required a total lifestyle change. Accordingly, if participants returned to work and family environments that remained unhealthy, then it would be very difficult to maintain success. With patient education and supportive home and work environments, people at greatest risk for metabolic syndrome and cardiovascular disease may enjoy a better quality of life and lower incidence of chronic disease than would otherwise be possible.

Areas for improvement

From a physician's standpoint, I suggest a few options for improvement which are likely to increase likelihood for success.

From work

Most working adults spend the biggest chunk of their waking hours at work. It's logical the work environment is a place to incorporate lifestyle change. At first glance, an employer may already be facing multiple challenges; rising healthcare cost, retirement plan changes, economic hardship (during recession). A study that sampled 88 US companies found that the employer paid a mean of $18,618 per employee per year for health and lost productivity-related cost; a major portion of which was related to cardiovascular disease. Additional spending on the health of employees may not be on the menu. But the fact is, investing a lifestyle-changing, health-promoting program can be financially rewarding. A review from the CDC found that a comprehensive worksite health programs could yield a $3 – $6 return on investment for each dollar employers invested over a 2 – 5 year period [15]. The report also indicated that, in addition to cardiovascular risk reduction in the long term, the program would also produce immediate health benefits such as fewer doctor visits, decreased absenteeism, and increased employee morale and well being.

The CDC has provided guidelines (components) for most effective worksite interventions. A sustained individualized cardiovascular risk reduction counseling and education is critical. Other main components include medical screenings/risk assessments and referrals, environmental supports for behavioral change (e.g. onsite blood pressure monitors, vending machines that provide low-cost healthy food choices, places for physical activity), health education workshops and support groups, financial incentives, and corporate policies supporting a healthy lifestyle.

The model of public and private partnerships in promoting lifestyle changes has also produced favorable clinical and cost outcomes. A recent example is the partnership between the CDC-funded 'Steps to a Healthier Austin' and Capital Metro (the local transit authority of Austin, Texas) via a wellness program delivered by a private company Health & Lifestyles Corporate Wellness, Inc [16]. Launched in 2003, the program provided multiple offerings, including one-on-one consultations, personal fitness trainer, preventive screenings, health newsletters, workshops, smoking cessation programs, and company fitness center (launched in 2006). In addition, cash incentives were rewarded if an employee reached specific clinical improvement such as losing 10% of body weight, blood pressure dropping to 120/80 mm Hg or lower, total cholesterol dropping to below 200 mg/dl, and so on. Employees were also given weekly discount coupons to purchase healthy cafeteria items and were financially rewarded if they remained tobacco-free. Since the implementation, Capital Metro's total health care costs increased by progressively smaller rates from 2003 to 2006, followed by a 4% decrease in 2007. The rates of absenteeism declined from approximately 10% to 7.6% in 2007. The overall return on the investment was $2.43 for every dollar spent. Another significance of this case is that the program was carried out in an ethnically diverse group (61.2% African American and Hispanic) with much lower median household income and higher rates of chronic disease.

As I observed the profound transformations in my study subjects, many of whom were Medical Center employees, I realized the need for a healthy and supportive work environment and subsequently oversaw the establishment of the UF and Shands- Jacksonville Employee Wellness Program. As a result of the TLC programs that address nutrition, smoking cessation, stress management and promote exercise, we are hearing conversations centered on the total

value of health and seeing the adoption by senior leadership of "promotion-of-wellness" as a serious business strategy.

From primary care setting

Physicians can be a great resource for many patients who are unaware of the potential consequences of unhealthy lifestyles. Physicians can act as teachers of health to enhance a patient's awareness of the causes of chronic disease and the importance of modifying behaviors for prevention of disease. Because primary care physicians are respected and trusted as sources of medical knowledge in the community, and the physician has regular contact with patients and access to medical histories of his or her patients, the physician has an advantage as the contact point for distribution of lifestyle advice.

In this role, the physician can act as an agent of change. Physician commitment to lifestyle medicine can have significant effects not only on patients, but also on the healthcare system as a whole. If effective lifestyle change programs became a standard of care, mortality and morbidity due to chronic disease would decrease, leading to a subsequent decline in healthcare costs. These physician-centered changes in patient care could pave the way for a wellness-based healthcare system.

However, some physicians have cited insufficient knowledge and skills to feel confident counseling patients about lifestyle changes [17] while others have expressed the lack of effective method in instituting risk reduction [18]. One approach to establishing clinic-based TLC programs would be to create a team effort, through which the physician collaborates with a lifestyle counselor to provide resources and support to the patient.

The Family Lifestyle Assessment of Initial Risk (FLAIR) Project offers a successful example [19]. This project is a primary care-based obesity prevention program targeting inner-city minority populations, in this case, Bronx, New York. The physician was involved in the screening and goal-setting process, while the lifestyle counselor acted as an empowering agent, providing a variety of tools, identifying community resources, and spending time strategizing on overcoming barriers to change. This physician-counselor model was received very positively.

Success of TLC programs depends on one-on-one attention, nutrition education, and accountability of the patient. Patients with chronic disease or high risk factors also need clinical monitoring. The primary care physician and lifestyle counseling team could provide many of the features necessary to produce positive results in a TLC program.

From home

Worksite health promotion programs create a supportive environment for employees to make lifestyle changes. The primary care physician can also provide many of the features necessary to produce positive results. As I described previously, however, the chances of sustaining the positive effort will be diminished if the home environment remains unchanged or unsupportive.

The physician/lifestyle counselor team can play an important role in establishing supportive environment at home. As in the case of the FLAIR Project, the lifestyle counselor focused on family lifestyle change instead of targeting individual(s), helped identifying facilitators and barriers related to family dynamics, gave credit for positive behaviors, and reinforced on strengths that the family could build on. Participants indicated that this approach to be very helpful.

The worksite program and/or the health care team can also help the affected family member(s) establish alternative supportive environment if certain negative family dynamics cannot be easily resolved. In this age of technology, there are many indications that a virtual support structure would greatly enhance the success of those working toward a healthier lifestyle. Blogs, online journals, or social networking sites would allow individuals to track progress, communicate with the healthcare team, and connect with others who are navigating similar challenges. Many people spend a lot of time using computers, and a computer-based support system would have the advantages of being available at work, home, and for some, on a phone application, as well as being accessible according to individual schedules.

Start early

Another means for chronic disease prevention that cannot be overlooked is to establish or correct healthy behavior early on. For example, many parents do not recognize that their preschooler has health-related concern such as obesity [20]. A physician (or a pediatrician) can be a facilitator bringing awareness to parents the importance of healthy lifestyle. This is particularly important for low-income minority families who are disproportionately affected by high rates of chronic diseases [21].

Two primary targets for implementing behavior change program are child-care centers and from home, and many successful interventions have been reported. Lunch Is In The Bag is a child-care center-based nutrition education program designed to help preschoolers increase consumption of fruits, vegetables and whole grains [22]. The program provided multiple components including nutritional guidance for parents to pack healthy lunches, classroom activities and educational stations for children and parents to reinforce messages, and teacher training. Learning about Activity and Understanding Nutrition for Child Health (LAUNCH) is a clinic and home-based behavioral intervention program targeting preschool obesity [23]. Dietary education, physical activity and parenting skills were provided at clinic sessions, and multiple in-home sessions were given to support generalization of the clinic-taught skills to the home environment. At the end of 6 months, not only did children significantly reduce their BMI percentile and weight gain, participating parents also had a significantly greater weight loss. Last, but certainly not least, is the Healthier Options for Public Schoolchildren (HOPS)/OrganWise Guys (OWG) pilot study, an elementary school-based obesity prevention program for low-income minority children [24]. By providing modified dietary offerings, nutrition/lifestyle educational curricula, physical activity component, and wellness projects, the program resulted in significant improvements in BMI, blood pressure, and even academic scores in these children.

Conclusion

It is going to take teamwork to transform medicine in the 21st Century from a "sick-care" system to a "health care system". Together researchers, dietitians, health educators, nurses, physicians, health administrators, patients, corporate decision makers and employees all will

need to participate in the construction of the "protective guard rail" at the top of the cliff. We all want to not just experience quantity of life complicated by chronic illness but rather quality of life which can only be obtained by focusing on managing health rather than managing sickness. This refocus of our priorities to helping people stay healthy is far more rewarding economically, culturally and personally.

"Cure peoples ills and make them healthy for a day.

*Teach them to stay well and keep them healthy for a lifetime." —**Chinese Proverb***

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