The Psychology of Chronic Disease Management: Cost Savings Through Improved Health Care

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The United States spends roughly $60 billion dollars annually on its one hundred million citizens living with chronic diseases such as heart disease, diabetes, and asthma (White & Roughan, 2000; Bodenheimer, 1999), yet only about 10% of health care provided integrates disease management programs (DMP) (Scott, 1999). While this industry is growing, the need to implement these programs in every facet of heath care is vital if the medical community is to impede the ever-growing costs of medical treatment while improving quality of life for the patient. This article will give an overview of the types of DMP and explain the cost-benefits of DMP, which includes the benefits to the patient, the benefits to physician and the benefits to the insurance provider, explain relapse and adherence, and the applications of psychological methodologies as a solution to reducing costs to the insurer and improving the health of those enrolled in DMPs.

Types of Disease Management

Disease Management can be effectively applied to almost any condition but is most effective when applied to chronic diseases. DMPs have been used to help with the treatment of hypertension, cardiac problems, type II diabetes, cancers, obesity, asthma, depression, and others. A study done by Mills, 2003, concluded that a depression DMP is the most effective and that it yielded better results in care than did DMP for diabetes (The second most effective DMP.) and other chronic diseases.

Benefits of Disease Management

There are many benefits to the patients involved in DMPs. Patient non-adherence to programs designed to prolong the lives and enhance the quality of life of the chronically ill is astoundingly high. In the literature, overall non-adherence was reported in ranged from 15% to 93% depending on regimen prescribed, between 30% to 60% for medication non-adherence, and even higher non-adherence rates for smoking cessation

and diet change (DiMatteo, et al., 1993). Exercise programs had non-adherence has rates of 50% failure rate after six months regardless of whether the program was structured or non-structured program (Emery, Hauck & Blumenthal, 1992). DMPs have been proven to increase adherence for all of these. Cardiovascular disease patients, for example, have shown a 21% decrease in the severity of their illness and a 44% decrease in hospital visits. Patients classified as "severe diabetics" decreased by 7%. A study on an asthma DMP created a 78% drop in days spent in the hospital and a 49% drop in emergency room visits (Pilnick, Dingwall, & Strarkey, 2001). Other studies have also shown positive results with asthma DMPs. One such study had a 23% reduction in hospital visits and a 15% increase in adherence to medication use by asthma patients. Obesity programs that offer social support and professional dietary assistance; show an increase in adherence and a 5%-15% reduction from initial weight. This 5-15% reduction is enough to reduce key indicators of conditions such as hypertension, type 2 diabetes, and hypercholoesterolemia, that are associated with obesity (Wadden, Brownell & Foster, 2002). The patient's relationship with their physician has also been shown to improve and overall physician satisfaction with DMPs is positive (Fernadez et al, 2001).

A study done by Fernandez, et al., (2001), has shown that 65% of physicians believe that patients who have participated in a DMP have had increased satisfaction. The study also has shown that the majority of physicians that participate in DMP believe that the programs have had an improved quality in their practice (73% increase, 24% no change, and 3% had a decrease.), improved the quality of care of targeted disease (75% increase, 21% no change, and 4% had a decrease), the physicians' incomes were not affected (2% increase, 91% no change, and 7% had a decrease), nor was the physician-client relationship affected (12% increase, 78% no change, and 10% had a decrease).

The benefits for the self-insured entity are the most extensively researched and well-documented aspect of DMPs. One of the most successful applications of DMP is also one of the best examples of the benefits to insurance providers, Evanston Northwestern Healthcare (ENH). ENH's DMP was designed to address patients with congestive heart failure (CHF) and was successful in reducing the length of stay (LOS) from a national average of 6.2 days to a LOS at ENH of 4.0 days. ENH's readmission rate of 2.3% was significantly lower than the national average of 23%. Prior to the conception of their DMP, ENH had the national average of 6.2 days for a CHF LOS and cost the organization $5.8 million annually. In approximately 10% of patient cases there is a need for home care. The cost of these home care services is $130 per day, significantly less than the $1,000 per day required for a hospital visit. "Kornowki et al concluded that using an intensive home care program illustrated a marked decrease in the need for hospitalization" (Knox & Mischke, 1999).

ROI and Implementation of DMP

DMPs do benefit Taft-Hartley Trusts, insurance providers, self-insured entities or employers who are covering the costs of their employees' health. As with all arenas of business, both inside the medical community and outside, positive ROIs are to be expected. An example of how profitable DMP can be was Health Hero Network based

out of Mountain View, California. Using an Internet communications platform entitled "Health Buddy," Health Hero Network is able to charge $50,000 for setting up the system for a customer and $100 per patient. CEO and President of Health Hero Network, Steve Brown expects his company to jump from $40 million in revenue to $100 million in revenue in the next few years. Steve also claims that, "With the right tools, any medical group in this country can offer disease management," (Scott, 1999). Another DMP firm, Cardiac Solutions, claimed that it created a cost savings of 20% to 30%. One program that Cardiac Solutions initiated with 4,933 patients with CHF produced a 52.6% ($33 million) reduction in costs over two years (Scott, 1999). In a relapse prevention pilot program for chronic illnesses with the New Mexico Carpenters Taft-Hartley Trust, over $200,000.00 were saved in one year with no cut in services for 10 patients (Mines, R. A., *Personal Communication,* 2006).

Psychological Factors in Relapse

Relapse in disease management (DM) is a highly important issue, yet is rarely addressed by DM companies or in the research literature. Relapse, although it is commonly associated with addiction, can be used to describe a return to the original behavior that was detrimental to an individual's health or social functioning. When used with DM, relapse can refer to an asthmatic individual who had been taking oral steroids when prescribed but had returned to a low level of medication intake and an increased number of hospital visits. DM for this intervention can find out if the reason for the relapse is an economic one or not. If not, then the reason for the relapse is probably based on some emotional disturbance in the individuals mind. This could include the whole spectrum of the DSM-IV or it could include environmental situations such as not having a social support network that prevented the relapse. DM for heart disease, Type II diabetes, and hypertension are all associated with obesity and DM based on psychological methods will not only insure that the individual is taking their insulin or medication to lower their blood pressure but would also assist the individual in weight loss and weight maintenance as the case may warrant. Weight loss is challenging no matter what a person's situation is, however, the good news is that with the proper cognitive expectations with diet, exercise and how much weight the individual is actually going to lose, DM can improve the health of the patient and lower the cost to insure them.

Relapse, when it is applied to obesity and dieting, is defined as weight that has been lost but then was regained (Marlatt & Gordon, 1985). Relapse in dieting is costly to both the patient and the insurance company covering the patient. Also, dieting can be treated similarly to rehabilitation services for substance abuse. Diet should be treated this way because, although the goal of weight loss is control of the amount of food intake and the goal of substance abuse treatment is complete abstinence, the relapse rates for both are about the same, around 67 percent in the first 90 days (Marlatt & Gordon, 1985). Self-efficacy can be defined as "a judgement of one's capability to accomplish a certain level of performance (Solomon & Annis, 1990)." High self-efficacy ratings are important for success in almost all behavioral health activities. With a high self-efficacy, people are more likely to prevent their own relapse. By having a high self-efficacy, individuals tend

to attract a stronger social support network, which reinforces one's ability to cope by having others supply incentives, good examples and by demonstrating the value of perseverance (Bandura, 1997). According to findings by Marlatt & Gordon, (1985), a good relapse prevention program (RP) that addresses high-risk situations, keeps a record of eating and exercise behaviors, analyzes relapse decisions, and emphasizes the discussion of slips, relapse, and self-efficacy will have patients with greater weight loss than a "standard" weight-reduction program that includes stimulus control techniques, methods for slowing down eating rate, hunger control techniques, use of rewards, changing procedures, methods of obtaining social support, and assertiveness training. The results of the relapse prevention program were as follows: 46% of participants in the RP continued to lose weight after leaving the program versus the 21% in the standard program; 27% maintained the weight lost during the program compared to the 14% in the standard program, and only 32% regained weight in the RP. The standard program had 64% of its participants regain weight, the expected relapse rate. In this case, the variable of addressing self-efficacy clearly improved the relapse rate. DM can offer help to the chronically obese by offering relapse based intervention programs.

Psychological Factors in Adherence

Patient adherence was defined as a more active, voluntary collaborative involvement of the patient in a mutually acceptable course of behavior to produce a desired preventative or therapeutic result (Meichenbaum & Turk, 1987). Patient nonadherence is a failure to follow through with that desired result and is a large problem in the medical community as a whole. A study by Masek (1982) showed results on nonadherence as low as 4% to a high of 92% with a typical range that was between 30 percent to 60 percent. DiMatteo, et al (1993) showed similar results to the Masek 1982 study. Patient non-adherence to programs designed to prolong the lives of the chronically ill was 15% to 93% depending on regimen prescribed, between 30% to 60% for medication non-adherence, and even higher non-adherence rates for smoking cessation and diet change and a high relapse rate (DiMatteo, et al., 1993).

Patient's nonadherence is difficult to improve because most patients will only increase their adherence if they see an immediate need to do so and if the regimen that is prescribed for them is a cure (Meichenbaum & Turk, 1987). Even when this has occurred, the adherence rates are still low. For example, when a group of patients where told to put eye drops in three times a day or they would go blind adherence remained low and even when they were legally blind in one eye, adherence only increased from 42% to 58%.

There are several factors that can lead to patient nonadherence including the patient not understanding what they have to do under the program, low patient self-efficacy in carrying out the regimen, the demand of the program is too high for the patient or the patient feels the that the costs outweigh the benefits, to the a poor relationship with their doctor, no continuity of care. DMP can decrease all of these barriers and improve treatment outcomes. Barat, Damsgaard & Andreasen, (2001), suggested that, "…better information on medication and the use of compliance aids may prevent nonadherence. Special attention should be paid to persons receiving three or

more drugs, living alone, receiving drugs from other doctors, and to persons with pre-dementia symptoms, as they are at higher risk of nonadherence." One study (Windsor et al, 1990) showed that when an asthma intervention group was educated about their disease, had group sessions and received reinforcement calls, had a 44% increase in adherence versus the 2% increase for the control group. The same study also showed that the cost effectiveness (total cost per group divided by the adherence score increase) was significantly lower for the experimental group ($96.09) who received the intervention than it was for the control group ($243.68) and showed the "need to allocate resources to significantly increase patient adherence (Windsor et al, 1990)." Another study done on adult diabetics showed that there was a strong relationship between self-efficacy and self-care in the areas of diet, exercise, and blood glucose testing (Williams & Bond, 2002) .

This demonstrates a potential solution for improving patient adherence by having the patient enter and continue a DM program, getting help in making/keeping appointments and follow-up appointments, insuring the correct consumption of prescribed medication, following appropriate life-style changes, correct performance of home-base regimens, and eliminating unhealthy behaviors (Meichenbaum & Turk, 1987). Properly educated providers under a DMP can help reinforce these points. Providers must understand there are several areas that the physician/case manager/nurse-patient relationship has to address. The provider has the responsibility to inform their patient about their condition, about the complications that may occur from that condition, and the proper ways that the condition must be treated if it is to be contained or to be cured. Simply asking the patient questions about how they feel about their condition, or how helpful they think the medication treatment is going to be for their treatment and then answering those questions, can increase adherence and the provider-patient relationship can be improved (Meichenbaum & Turk, 1987).

Psychological Factors in Emotional Intelligence

Emotional intelligence can be defined as " a form of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and action (Salovey & Mayer, 1990). With this in mind, emotional intelligence can be applied to DM in a variety programs and illnesses. For example, with diabetes, if one were just to increase adherence with the patient's insulin regimen then there might less hospital admissions related directly to diabetes. However, if one were to trace the origins of the diabetes they would be able to address a larger problem. Since complications with Type II diabetes are associated with the development of obesity, a quality DM program would treat those individuals who are in need of a weight loss program. By treating obesity, a DM program designed primarily for diabetes can also lower the risk of patients acquiring other weight-related illnesses such as heart failure and hypertension. In order to treat obesity properly, the early social learning and family systems norms associated with it must be addressed. While some of the population is naturally obese due to glandular problems or genetics, most of the American population is overweight because of a complex array of variables, and many of these variables may be associated with lower emotional intelligence. Many people who overeat and are then, consequently,

overweight, do so be cause they do not distinguish whether they are bored, angry, depressed, or genuinely hungry and, therefore, eat to cope with their problems (Goleman, 1995).

Other health problems were associated with emotional distress. Heart problems and hypertension have been linked to anger, anxiety, and depression, independent of weight problems (Goleman, 1995). High emotional intelligence was also linked to the creation of a strong social support network. These social support networks, then in turn, increased the emotional well being of the individual as well as prolonging their life. In a study on advanced metastatic breast cancer with women whose disease had spread throughout their bodies; those women who went to weekly meetings with others *survived twice as long* as did women who faced the disease on their own.

On the other hand, the emotional intelligence literature had some contradictory data. Some of the research suggested that treating depression in post-myocardial infarction patients, although effective for the treatment of the depression, did little good for the reduction of recurrent infarctions or mortality (Smith & Lesperance, 2003). Furthermore, many clinical trials of perceived social support defined "social support" in differing ways, and some suggested that social factors were not as important in recovery from health complications in illnesses such as myocardial infarctions (Smith & Lesperance, 2003).

Recommendations

The area of most promise for the management of chronic illness is in the area of relapse prevention and adherence. The individual's beliefs and expectations regarding their illness play a central role in their success or failure to follow through with their physician's treatment plan. The social system and cultural context of the individual are additional areas with psychological implications for treatment management as the person's family and social system will support or detract from adherence depending on the norms and resources of the group. This paper concludes with recommendations for obesity and diabetes, while recognizing that heart disease, asthma and a host of other illnesses warrant similar consideration.

Recommendations - Obesity

The following recommendations for obesity treatment are an example of a prototype based on the literature. The red flags for obesity are heart conditions, diabetes, hypertension, and hypercholoerstomia. Once a physician has diagnosed one of these, the individual's body mass index should be assessed. The clinically obese, a body mass index (BMI) over 30kg/m^2, should be required to enter the program. A BMI over 25kg/m^2, the clinically overweight, should have the option to enter the program, but individuals who are extremely obese (A BMI over 40kg/m^2) may benefit from a surgical option depending on the medical acuity and need for immediate weight loss.

At the start of the DMP, the patient's beliefs, expectations, understanding, history of adherence and relapse, family system and social support should be assessed by a case manager (CM), in order to assist in developing the adherence plan. The case manager would have consistent and regular contact with the patient through phone calls or face-to-face meetings that are arranged weekly, monthly, quarterly, or as needed to facilitate the patient's adherence to the regimen prescribed to them. The case manager functions as a health coach to the patient and the patient's family regarding their psychological factors related to the adherence challenges. In 40% of the cases the patient may be going through a diagnosable adjustment disorder, depression or anxiety disorder and require more intensive counseling or psychotherapy to improve their medical treatment plan adherence. The case manager would also be responsible for contacting the physician and informing them of the client's participation in the program and the physician's responsibilities. The physician's responsibilities would include calling the CM when there has been a sharp decrease in health conditions or other specifics as the case may warrant. The CM would have the additional responsibility of calling the pharmacist to insure that the client is adhering to the medication regimen. A consult with an in-network dietitian would be required upon the client's admission to the program to set up a diet/exercise program that increases self-efficacy and sets up realistic goals for the client. The dietitian would then have to pass on that plan to the CM, making it the CM's responsibility to assist in the client's adherence. The overall goal of the DMP is not for the client to achieve their ideal weight, but to lower their weight by 10-15% so that many of the health problems and risks associated with obesity can minimized. The program should also increase the self-efficacy of the client to insure that when they do lose that weight and are no longer in the DMP, they can continue to stay at a healthy weight.

Recommendations – Diabetes Type II

DMPs for diabetes can be delivered in a similar structure to obesity, as the two conditions are linked. The Type II diabetic often has the weight loss needs that the obese individual is faced with as well. All of the weight loss program adherence issues should be considered in the DMP for the diabetic.

In addition, the diabetic's perception of their illness plays a significant role in how they take their medication, their view of the medication delivery methods (shots, pills, monitoring food intake). The patient's emotional response can facilitate or impede their adherence. This is based on their psychological beliefs about their illness, their sense of self-efficacy in "overcoming or managing" their illness, and their "reason for living". Many diabetics also have other illness complications such as cardiac disease and high blood pressure. This further complicates the psychological aspects of a DMP for diabetics as the interventions and medications can have additional negative side effects and increase the potential for nonadherence. The social psychology of the person's family and culture play important roles in the patient's adherence. For example, in a family system where the wife cooks the meals and desserts are important daily rewards, there will be increased pressure on the diabetic husband to eat foods that decrease the chances of weight loss and increase the chances of blood sugar swings. If the intervention is not with the spouse as well, the patient will have a more difficult time. Diabetes is not an

obvious illness to others as a major heart attack might be and therefore, they may not consider family system changes that may be helpful to the patient such as dietary or recreational changes (going for a walk after supper rather than sitting down to watch TV).

Conclusions

In conclusion, DMPs for chronic medical illnesses have great potential to improve the quality of life for patients. Better patient adherence can reduce the medical and societal costs associated with treating the illnesses. Payors are going to be faced with requiring patients with chronic medical illnesses to participate in DMP programs. For close to two decades, patients with chronic illnesses such as depression and alcoholism have participated in disease management programs with great success in terms of improved quality of life and health and reduced costs associated with treating those illnesses. From a psychological and case management perspective there is no functional difference in requiring participation in DMPs for other illnesses and therefore there is a strong precedent for self-insured entities to require DMP participation.