

# Weight Loss Results After One Year of Continuous Treatments at A Medically Supervised Weight Loss Clinic

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## Background

Approximately 65 percent of the American adult population is overweight or obese<sup>1</sup>. Obesity is now seen as a complex biopsychosocial disorder of energy regulation. It results in an increased rate of morbidity and mortality for the individual patient, and it also causes an increased economic burden upon our healthcare system.<sup>2</sup> As a disease, it is often as frustrating for the physician to treat as it is for the patient to be treated.

Yet, treating physicians often have the first opportunity to intervene in the “obeseogenic process” and provide effective weight loss treatments. Direct physician intervention through specific recommendations has been shown to exert a powerful influence on patient behavior, especially in disorders involving lifestyle behaviors.<sup>3</sup> Their clinical offices are often the mainstay and front-line sites for the treatment of obesity and its many associated co-morbid conditions.

Unfortunately, the healthcare community is not as actively involved in the prevention and treatment of obesity as it should be. There still continues to be considerable resistance on the part of many treating clinicians to take an active part in the treatment of obese patients.<sup>4</sup> The reasons for this resistance are varied, but include misperceptions about the causes of obesity, lack of training, insufficient office time to deal with the psychological difficulties obese patients face, limited staff support, difficulties with insurance payments, and the perceived poor and discouraging long term success rates. A recent study<sup>5</sup> suggests that primary care management of obese patients is largely deficient due to four interrelated factors; 1) doctors’ poor recognition of patients’ weight status, 2) doctors’ inefficient efforts of effective interventions, 3) patients’ poor acceptance of such interventions, and 4) patients’ dissatisfaction with existing lifestyle modification strategies.

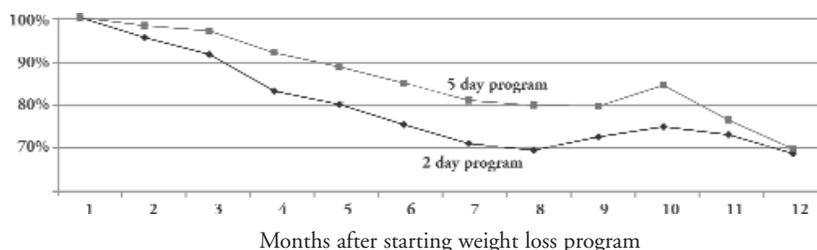
At present, there are too many obese patients who require extensive and comprehensive care, and too few treating clinicians and clinics in which to provide such treatment. This situation clearly documents the need to make more available safe and effective weight loss programs.<sup>6</sup>

However, even the issues of how such treatments for patients in the real world environment are provided, and how such treatment results are interpreted, are now also being re-examined. Recent articles have raised the concern that many of the current treatments, and how they are administered require a closer evaluation suggesting, “If we wish to find the optimal weight loss strategy, it is time to investigate different designs in weight loss studies”.<sup>7</sup> Petersen and Harper go on to suggest, “Randomized clinical trials have tended to focus primarily on the purely dietary aspects of the intervention and paid too little attention to the behavioral and psychological problems that may affect the obese individual.” Indeed, a recent study demonstrated that information regarding psychological status may be more useful than that regarding behavior in predicting weight maintenance success.<sup>8</sup> Consequently, new treatment approaches and the results of such interventions must be continuously evaluated.

But, because of the increased demands and constraints (time, economics, etc.) put upon treating clinicians, and the negative biases toward obesity treatments, many primary care physicians may not take the opportunity to refer their obese patients to an obesity specialist (e.g., bariatrician, endocrinologist). Rather, they often choose to refer their obese patients to auxiliary personnel, community based commercial programs operated by lay personnel, or to a medically-supervised weight loss program. Such medically supervised programs have a recognized and accepted place in the overall treatment model for weight loss. However, it has been stated “commercial weight loss programs have been slow to initiate solid research that demonstrates the ability of their ‘product’ to produce the desired outcome-long term weight loss. This reluctance may stem from a fear that the results of such studies might place them at a disadvantage, i.e., show them to be less effective than their advertised claims and the competition, or worse still, no more effective than doing nothing.”<sup>9</sup>

The Lindora medical clinic is one such medically supervised weight loss program, which has been treating overweight and obese patients for more than 30 years. However, its treatment

**Figure 1: Percentage of patients seen each month over time**



results have never been provided to the medical community for their professional review. Thus, responding to the comments of Hamilton and Greenway that, “commercial weight loss programs have been encouraged to provide data regarding their safety and long term efficacy,”<sup>9</sup> this study serves to document the weight loss results of a medically-supervised weight loss clinic.

### Research Methods and Procedures

This retrospective study was conducted throughout all of the 33 Lindora medical clinics, throughout five counties in Southern California, among all patients (N=6564) who started the Lindora weight loss program. Patients were screened to exclude those having insulin dependent diabetes, unstable angina, serious hepatic, and renal or psychiatric disease. All patients who started the weight loss program between 01/01/02 and 12/31/02 were considered for the study. Patients paid for their treatment program in advance, so they were financially motivated to receive all of the treatments for which they had paid. They had the option to self select either a program of five daily clinic visits per week, a four-week program totaling 20 treatments for the first month, or a program of two daily clinic visits per week, a four-week program totaling eight treatments for the first month, on days of their choice. But only those patients who had completed either all 20 or all eight treatments of their respective program during the first month were entered into the study. Once they fulfilled this admission study criteria, they were then entered into the observational study and followed for 12 consecutive months. The qualifying participants were 2,278 overweight or obese patients (342 men, 1,936 women) whose average age was 44. Their average initial starting weight was 203.3 pounds, with a BMI of approximately

33. Only those patients who presented for at least one treatment during a given month were ultimately evaluated for treatment compliance and weight loss for that month. The only inclusion criterion for any given month’s treatment was a minimum of one clinic visit for that month.

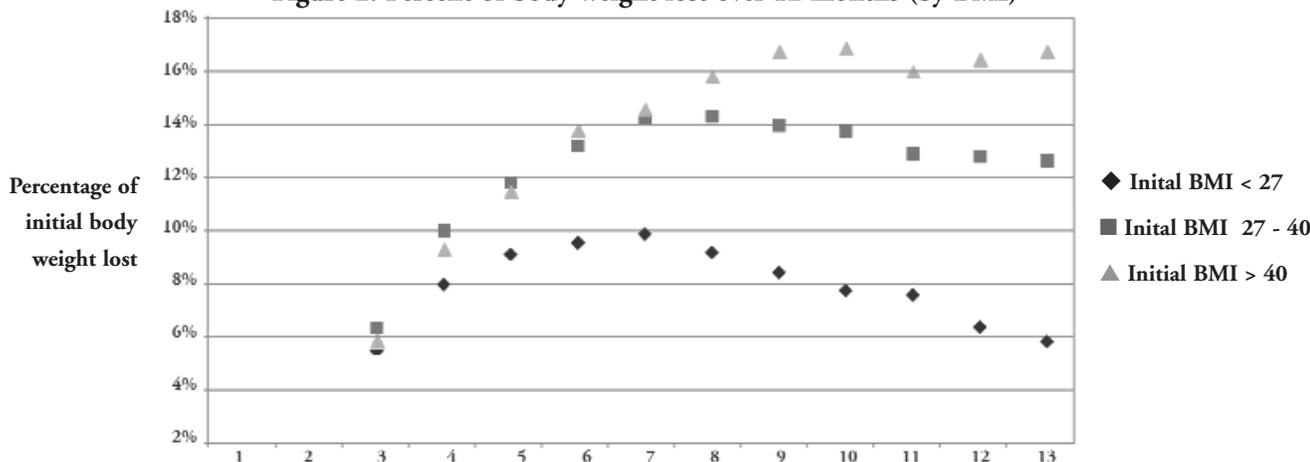
Patient attendance and weights were only recorded for a specific month if they came in for a treatment(s) during that month. Thus, for some months there may have been more or less numbers of patients than for other months (Figure 1). But all evaluated patients had, at a minimum, completed their entire first month’s group of treatments. Thus, the group of patients studied was 100 percent treatment committed for their first month; their initial weight obtained at the time of their first initial treatment was used as their starting weight.

All new patients in the Lindora program complete a 17-item health and psychological fitness questionnaire, investigating specific weight related healthcare topics (Table 2). Approximately 45,000 Lindora patients have completed such a questionnaire to date. Each of the 2,278 patients in this study also completed this demographic questionnaire, and their responses are included in the entire pool of results of the ongoing collection of demographic data. Thus, these questionnaire responses (Table 1) are not limited to the 2,278 participants identified here.

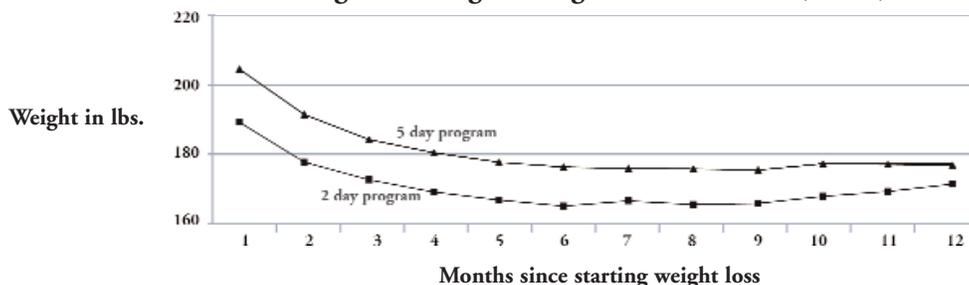
Each patient was seen and evaluated with a history and physical examination by a physician or nurse practitioner trained in bariatric medicine. Each new patient also received a comprehensive laboratory blood panel before being started on the

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**Figure 2: Percent of body weight lost over 12 months (by BMI)**



**Figure 3: Weight change over 12 months (in lbs.)**



program. The treatment program consists of a low carbohydrate, reduced fat and moderate protein intake of about 900-1200 calories per day. Throughout the study all patients were instructed to follow the initial weight loss program of 900-1200 calories. They were instructed to record their eating behavior in food diaries, which were provided. They also began an exercise program of walking and each patient was given a pedometer to wear throughout the day, and a goal of walking 10,000 steps each day. Each treatment visit included a weigh in, review of the patient's food diary and exercise activity, and appropriate patient-specific cognitive/behavioral counseling. Blood pressure was recorded weekly. Approximately 6 percent of all patients in the study used an anorectic medication. Its use was based upon the patient's clinical need and appropriateness. Medication used was either phentermine, 15-30 mg per day; sibutramine, 10-15 mg per day; or tenoate, 25 mg, 1-3 times per day. No adverse side effects or complications were associated with their use.

## Results

The total number of patients who initially entered into the Lindora Clinic treatment program during the year 2002 was 6,564. However, only 2,278 patients met the study criteria for the study-patients who had completed their first entire month of treatments-and were enlisted into the 12-month study. The reasons that the other 4,286 patients (65 percent of the total starting number of patients in the year 2002) did not fully complete their first month's treatment-treatments which they paid for at the onset-are being evaluated in a follow-up review. These 4,286 patients did not necessarily "dropout" of treatment or give up, but rather approached their initial first month of treatment in less than a fully committed manner. Once entered into this study, for the study population of 2,278 patients, "attrition" is taken to mean that the patient did not subsequently present for a single treatment for that month's evaluation. Of the 2,278 study patients, 1,895 completed the five days per week program and 383 elected to complete the two days per week program for their first month's treatment.

All new two days per week program patients (N=383) started with an average weight of 191.4 pounds. By month 12, average weight dropped to 173.9 pounds, a loss of 17.5 pounds and a 9 percent reduction in total body weight (Table 1). Both between and within group differences were highly significant with the

exception of weight change between months 6 and 12 in five-day and two-day per week groups.

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The number of treated patients in the five-days per week program decreased from 1,895 to 1,285 (67.8 percent of starting patients) at the end of 12 months. The number of patients in the two days per week program dropped from 383 to 262 (68 percent of starting patients) at the end of 12 months (Figure 1).

Figures 2 and 3 show that the five-day per week program participants had achieved their maximum weight loss at months 7 through 8, with a total loss of 25 pounds. However, they regained back only one pound or 4 percent of their maximum weight loss at the end of the 12th month. Figure 3 shows that the two-days per week group had achieved their maximum weight loss at month 6 with a total loss of 23.4 pounds. But this group regained 6.1 pounds or 25 percent of their maximum weight loss by the end of the 12th month. These results reinforce Jeffrey and Wing's observation that increased frequency of treatments with health provider interactions result in better weight loss.<sup>10</sup> Our study finds that an increased frequency of treatments (five per week verses two per week) resulted in slightly better weight loss and resulted in significantly less weight regain at the end of one year. The patient attrition rates were similar for both groups (32.2 vs. 32.0 percent for five verses two visits per week programs, respectively).

Patients' weight loss results were also directly correlated with their starting BMI, the greater the patient's BMI; the greater was their total weight loss (Figure 2). At the end of one year, all patients who had a starting BMI of 27 or less lost 6 percent of their total body weight. Those patients who had an initial BMI between 27-40 lost 13 percent of their total body weight, and those patients who had a beginning BMI greater than 40, lost 17 percent of their total body weight (Figure 2).

The 17-item demographic questionnaire (Table 2) completed by patients at the time of their initial visit showed that 43 percent of patients reported a history of and/or having been a victim of sexu-

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**Table 1. 17-item health questionnaire**

	Number	% responses		Number	% responses		Number	% responses
<b>1. Gender:</b>			<b>8. Do you have a history of and/or current problem with compulsive eating, bingeing, or an eating disorder?</b>			<b>14. I take medication for the following diseases:</b>		
Male	5,298	12	Past history			High blood pressure	4,730	45
Female	38,834	88	now resolved	2,305	6	High cholesterol	2,110	20
<b>2. Ethnic background:</b>			Present problem for more than 2 years	5,478	14	High triglycerides	473	5
African American	3,602	8	Present problem for less than 2 years	1,537	4	Heart disease	487	5
Mexican American	4,911	11	No past or present history	29,587	76	Diabetes mellitus	754	7
Other Hispanic	2,323	5	<b>9. How much do you smoke?</b>			Osteoarthritis/ Back Pain	1,882	18
Asian	1,169	3	I never smoked	26,824	62	Gallbladder disease/ Gall stones	75	1
Caucasian	28,841	66	< a pack a day	4,108	10	<b>15. Why do you think you have a weight problem? Check all that apply.</b>		
Other	2,537	6	> a pack a day	676	2	Eating the wrong kinds of foods	31,590	24
<b>3. Marital status:</b>			> 2 packs a day	162	<1	Eating too much food	24,840	19
Single	11,099	25	I quit smoking	11,196	26	Too much nibbling, snacking and/or late night eating	25,047	19
Married	25,575	58	<b>10. How much alcohol do you presently drink on average per week?</b>			Overwhelmed with life's problems and stress	11,865	9
Divorced	5,204	12	I never drink	14,985	37	An internal metabolic or medical problem	7,445	6
Separated	821	2	0 - 2 drinks	18,275	45	Not enough exercise	27,431	21
Widowed	1,218	3	3 - 5 drinks	4,945	12	I don't know	4,118	3
<b>4. Approximate annual household income:</b>			6 - 10 drinks	1,859	5	<b>16. I exercise for at least 10 minutes or more:</b>		
Under \$30,000	6,280	17	More than 10 drinks	594	1	Never	9,559	24
\$30,000 - 39,999	4,402	12	<b>11. In your family is there a history of and/or have you ever been a victim of:</b>			Once a week	8,075	21
\$40,000 - 49,999	4,096	11	Alcoholism	10,186	41	2 - 3 times a week	12,724	32
\$50,000 - 74,999	7,636	20	Drug abuse	3,893	16	4 - 5 times a week	6,671	17
\$75,000 - 99,999	5,086	13	Sexual abuse	2,458	10	More than 6 times a week	2,274	6
\$100,000 and over	10,208	27	Physical abuse	2,857	12	<b>17. The number of different diets and/or different diet programs that I have tried before coming to Lindora is:</b>		
<b>5. Highest level of education achieved:</b>			Emotional abuse	5,264	21	0	4,912	12
Grade school	2,374	3	<b>12. Do you use food and eating as a way of dealing with stress, anxiety, or depression?</b>			1 - 3	20,828	52
High school	22,264	26	No	8,250	20	4 - 6	7,847	20
2 years college	24,852	29	Occasionally	14,955	37	7 - 10	2,718	7
Graduated college	24,192	28	Frequently	8,414	21	more than 10	3,875	10
Professional school	12,354	14	Very frequently	4,080	10			
<b>6. Other family members that are overweight or obese:</b>			All the time	4,610	11			
Mother	17,652	31	<b>13. I have the following diseases:</b>					
Father	9,422	17	High blood pressure	5,925	28			
Spouse/partner	6,869	12	High cholesterol	6,579	31			
Brother(s) and/or sister(s)	15,428	27	High triglycerides	1,820	9			
Grandparents	7,479	13	Heart disease	660	3			
<b>7. At what age did you begin to gain excess weight?</b>			Diabetes mellitus	1,061	5			
0 - 10 years	5,444	13	Osteoarthritis/ Back Pain	3,989	19			
11 - 16 years	6,626	15	Gallbladder disease/ Gall stones	9,54	5			
17 - 25 years	9,474	22						
26 - 35 years	10,775	25						
After 35 years	11,112	26						

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al, emotional and/or physical abuse. This is an important part of the patient's weight loss history since the professional literature documents numerous examples of reported sexual abuse in morbidly obese patients.<sup>10</sup> In a study of obese women who weighed more than 250 pounds, approximately 80 percent of them self-reported that they were subject to sexual abuse.<sup>12</sup> While this demographic data is self-reported and consequently suffers from the pitfalls of self-reported data (unreliable, inconsistent, etc.) there are several important clinical issues which may influence weight loss.

Attention to these psychosocial issues is significant since they may have a relevant impact upon the results of weight loss treatments and, more importantly, long-term weight loss maintenance. While focusing on how weight gain occurs, such as daily amounts of ingested calories and lack of daily physical activity or exercise, it is also important to consider why these patients choose to use food as a coping mechanism. It is important to consider what emotional and/or psychosocial stressors may have occurred so as to cause the patient to overeat.

The behavioral response of using food to cope with stress is highlighted by the self-reported response that 42 percent of those patients who completed the demographic questionnaire reported using food and excessive eating as a way of coping with stress, anxiety or depression frequently, very frequently, or all of the time. While of interest to treating clinicians, these issues are more than academic as they present a therapeutic window of opportunity for the physician to "connect" with the patient, and teach them other non-food related coping skills.

These same patients also reported that 62 percent of them think they have a weight problem because of eating the wrong kinds of foods, eating too much food, and/or engaging in too much nibbling and snacking. Understanding why patients use food in the ways that they do probably has more to do with their weight gain, and poor weight loss results than does micronutrient food choices per se. Why a patient binges on high-refined snack foods with high concentrations of sugar and fat is as important as how much of these "problem foods" the patient eats.

## **Discussion**

The most significant results of this study are a high non-adherence rate early in treatment, but better than expected adherence rates, and weight loss results among those who remain. It would appear that those who remain in treatment achieve good weight loss results, but it may also be that, conversely, those who achieve good results remain in treatment. However, what is most important is that the patient remains in treatment especially during the initial "buy in" phase of treatment. By presenting actual weight rather than the contentious<sup>13</sup> use of "last observation carried forward," a more complete picture of weight change over the 12 months is seen.

Two recent papers explored the concept of increasing patients' weight loss results, one through increasing compliance by increasing satisfaction, and the other by decreasing dissatisfaction by decreasing expectations. In the first, Dellande's paper reports that, in the field of healthcare compliance, the variable that most consistently has been found to be associated with compliance is the patient-caregiver relationship.<sup>14</sup> Compliance was also directly related to patient satisfaction. Satisfaction, they report, is both a cognitive and an affective evaluation of one's healthcare service experience. Positive emotion is most important in assessing patient satisfaction with medical care. They also note that disconfirmation, the discrepancy between what is anticipated and what is received, is a predictor of satisfaction.

In the second paper by Foster,<sup>15</sup> patients' expected dissatisfaction with their future weight loss results were preventively tempered by decreasing the patients' anticipated weight loss results. In their study patients were told that their weight loss goals were too high and that a 10 percent total body weight loss would probably be unrealistic. At the end of their study, they found that their patients' actual weight loss results did indeed fall below the patients' expectations. Lower expectations appeared to lead to lowered results. Treating clinicians should recognize that while obesity is as frustrating to the doctor as it is to the patient, therapeutic nihilism is not warranted. Poor weight loss results have connotations that weigh heavily upon treating clinicians and their patients. Our data suggests that while the results of obesity treatments are still far from acceptable, and with unacceptable dropout rates, there is reason to be optimistic about the medical treatment of obesity.

In our retrospective study of new patients who satisfied our study criteria, it is difficult to discern what specifically contributed to program adherence among the 34 percent of the total initial patient population who remained in treatment. Perhaps when patients anticipate success, and are encouraged to believe that they will succeed, they will indeed succeed. This may help explain why those patients who succeeded in completing their initial month treatment then went on to succeed with their weight loss.

The initially high rates of non-adherence to the treatments in this study suggest that weight loss programs need to devote more time and resources to the retention of patients. Foreyt and Poston recommended that "behavioral counselors in obesity treatment programs develop a collaborative relationship with the patient by using counseling and listening skills, thus improving the patient-provider alliance".<sup>16</sup> Experienced treating clinicians understand this alliance represents a "therapeutic bond" between patient and physician, which can serve as a potent therapy to help change the patient's 'mind set' and behavioral lifestyle. Much has been written about how the right words, which when used by the physician within this 'therapeutic bond,' can be a powerful medication. They can be the initiating factors to motivate patients to adopt

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new healthy behaviors and “mobilize the inner resources that are required for healing”.<sup>17</sup>

The health questionnaire data also show that several important psychosocial issues that may often go unrecognized, and thus untreated, may influence weight loss results and hence patient satisfaction. As suggested by Fellitti,<sup>18</sup> the issues of emotional, physical and/or sexual violence should be explored in obese patients seeking treatment. These obese patients seeking treatment appear to be ready and able to acknowledge any difficult emotional issues, and are different from obese patients who do not seek treatment.

The weight loss data shows that weight loss clinics are able to effectively treat ambulatory obese patients with a 12 percent total body weight reduction, as long as patients will remain in treatment. These results can be marshaled into a therapeutic intervention emphasizing hope and optimism for further weight loss compliance, maintenance and thus patient satisfaction. In a follow up paper, we will describe differences in demographic and weight loss outcomes between dropout and continuing patients.

If obesity is viewed as a biopsychosocial disorder, the patient's active involvement plays a greater role in their treatment outcome than in the typical passive medical disease model. In the traditional medical model, compliance and a positive outcome are often more dependent upon external factors such as which medications are prescribed, or which surgical approaches are used. Obesity treatments can be productive when patients choose to use them, but it must be appreciated that the patient must be an integral part of the treatment process for it to be effective. Successful non-surgical obesity treatment may significantly depend upon the patient's self-directed actions in which the patient is actively committed to their treatment. The dictum “the best exercise is the one you actually do,” also applies to diets. So, patients must be encouraged to be committed from the start of their treatment program, and weight loss programs should be designed with long-term patient acceptance in mind.

Many of the clinical studies of weight loss involve patient groups, which begin evaluation from day one of their initial treatment. Unfortunately, high attrition rates often begin to occur within the first month and then increase over time.<sup>19</sup> This high attrition rate colors the outcome data to show poor adherence to the treatment and represents bland weight loss results. However, if these non-adherent patients don't use the treatment, how can the results of an unused treatment be clinically valid? Perhaps the treatment does not so much fail the patient as the patient fails the treatment.

This may be the most crucial part of any behavior lifestyle treatment program, and once patients' defensive behavioral barriers are overcome, then the actual results of patients using the treatment can be more accurately evaluated. If the treatment is evaluated after the patient has “committed” to the treatment and “bought into” the treatment in an active manner, especially for a lifestyle behaviorally

oriented disease such as obesity, then the results may more accurately measure the effect of the intervention.

This study shows that obesity, now regarded as a medical disease, can be treated effectively (more than a 10 percent loss of initial body weight) by treating clinicians using medical tools. Whether these physicians are located in their private practices, university teaching centers, or medically-supervised weight loss centers is of less importance than is their presence and guidance of the treatment team. The question of which medical professional (physician, surgeon, psychologist, nurse practitioner, dietitian, nutritionist, etc.) can deliver better care is dwarfed by the realization that more than 60 percent of the nation's adults are overweight or obese. An important part of solving the obesity epidemic is to increase the numbers of treating physicians and other allied health professionals who can deliver high quality bariatric medicine.

These results are more promising than those of the recent reports on the use of some popular diets.<sup>19</sup> The present study supports the concept that treating physicians and allied health professionals who are well trained in bariatric medicine, along with an increased frequency of treatments, can substantially increase weight loss results. With the current escalation in the numbers of obese patients seeking treatment, it is important to recognize that the medical treatment of this disease can produce safe, significant, and sustained weight loss.

One of the major limitations of this paper is that this is not a randomized, controlled study. However, this is difficult to construct in the “real-world” environment in which medical weight loss clinics operate and, while there is a paucity of comparable published studies in a fee-for-service population, this study most nearly represents real world conditions. The authors believe it important to acknowledge that, unlike the great majority of published articles on obesity treatments, this patient population did not receive any compensation for participation. In fact, they paid for their treatment and this financial incentive “to get what they paid for” may even add another source of motivation.

Insurers and third-party payers should be interested in a weight loss program that can early on separate out those committed patients from those who are less than fully involved with their treatment. Patients committed to their treatments usually are more successful and achieve better results. Our study shows that committed patients following an intensive, high treatment frequency program can achieve good weight loss results after one year (12 percent total body weight loss).

Putting scarce healthcare resources into the treatment of a highly motivated patient population should be able to produce better results at a lower cost. Since these resources do not have to be so thinly spread over the entire initial population-but only to those showing commitment to the program-more intensive and target-

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# Weight Loss Results After One Year

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ed therapies can be focused upon those most likely to succeed. Being able to separate out those patients not yet ready to commit fully to a weight loss program will give those other patients who are ready to commit to treatment a greater chance of success at a significant cost savings.

If those patients, who are committed to actively participate in their treatment, are reinforced in their efforts from the inception of their treatment, as our study suggests, results of weight loss intervention may be found to have a more positive outcome. This may allow for the treatment of obesity through diet and exercise to have a more optimistic future for both the patient and the physician. ■

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## News and Research

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"We believe that treatment will be most fruitful when the healthcare community and the general public recognize obesity as a chronic, incurable condition, requiring long-term management similar to diabetes and hypertension," they write. Many other conditions do not have cures and for these long-term management is expected, they point out, not regarded as failure, as has been the case with obesity treatment.

They also assert that the concept of "healthy obesity" (ie the individual who is obese but exercises regularly and eats a healthful diet) deserves further study. "It is important for researchers and healthcare providers to help patients become more aware of the positive outcomes associated with healthful lifestyles, regardless of the impact on weight."

The authors discuss the various techniques and approaches of current interventions, the short- and long-term results and safety concerns. In the future they expect several important issues and limitations to be addressed in new ways:

- Healthy weight definition: instead of trying to define risk by BMI level, the future may hold more focus on maintaining a "reasonable weight." Health differs greatly for individuals at a given weight, and healthy lifestyle can make a difference.

- The future may emphasize the importance of long-term improved health and longevity in treatment, rather than short-term benefits that are not sustained. More research is needed on the effects of weight cycling and potential hazards of obesity treatment.
- The focus of treatment is likely to be on long-term management and extended care for obese patients. Research is needed into long-term management of obesity, including its cost-effectiveness.
- Increased emphasis needs to be on obesity prevention and health promotion. This should focus especially on promoting active living, and on targeting high-risk individuals and populations. Early intervention for overweight children needs study in efforts to prevent adult obesity.
- More research and promotion is needed on the benefits of broader outcomes of treatment, such as dietary and activity changes, psycho-social functioning, and control or prevention of obesity-related complications. (Terre L, Walker SCP, and Foreyt J. Overview and the Future of Obesity Treatment. In Goldstein DJ, Editor, *The Management of Eating Disorders and Obesity* (2005). Totowa, NJ: Humana Press.) ■

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