Goal Setting

Oliver Hardy put it so aptly, “Stanley, look what kind of a mess you’ve gotten us into now!”

Here we are. You’ve got diabetes, its not well controlled, your cholesterol is up, and your blood pressure is borderline. You’ve decided you need to make some changes in your live. The first thing you need to do is to set some goals.
The first question you should be asking is, “What is the most important aspect of controlling this disease and its complications?” Is it taking the right medications? Is it losing weight? Is it a regular exercise program? After all, why not focus your energies on the one or two items that will get you the most effect for your efforts?
If we were to assign an order of importance to taking medications for treating diabetes vs. weight loss for diabetes vs. a regular exercise program, here is how it would look. Number 3 in importance would be the use of medications to control diabetes. For some people (those with Type 1 diabetes) it is true that insulin is a life saving medication and they couldn’t survive more than a period of days without it. On the other hand, the vast majority of people with diabetes have a different type of diabetes then that, Type 2 diabetes mellitus (DM). This form of diabetes tends to occur in individuals over the age of 30 and develops because of multiple biochemical problems including insulin resistance in muscle, fat, and liver tissue and eventually decreased insulin production. The drugs that we have to treat Type 2 DM target each of these specific defects. If you treat diabetes with just one medication that treats one of the defects, you don’t typically see dramatic changes in blood sugar levels. However, the more defects you correct in treating Type 2 DM the greater effect you see with the combination of medications. That’s why most individuals wind up on 2, 3, or more agents to treat their diabetes.
Number 2 in importance in controlling diabetes is exercise. That’s because the major tissue utilizing blood glucose with exercise is muscle. Increased muscle activity will increase glucose utilization by the body. Because so much of our bodies are composed of muscle tissue, increasing glucose utilization by muscle will profoundly affect blood sugar levels. Vigorous exercise can increase glucose utilization as much as 20 fold over baseline. What this means is that the major determinant of diabetes in most individuals can be overcome (in the short run) by vigorous physical activity. This dramatically reduces or normalizes insulin resistance allowing blood sugar to get into muscle cells where it is utilized to fuel muscle activity. The advantage of exercise is that properly instituted, it can be worked into a daily routine, is simple, painless, cost-effective, and extremely beneficial. The biggest disadvantage is that the training effect of exercise on muscle glucose utilization lasts for a very short time, only about 24 hours. This means that if an individual exercises 3 days per week and we were to map their insulin resistance we’d see that on those days of more physical activity their insulin resistance declines, and on those days they don’t exercise their insulin resistance rebounds up again. You might well imagine how this oscillating insulin resistance will affect blood sugar levels. This sometimes gets people into trouble with regard to their diabetes control, with low blood sugar reactions, then high blood sugar levels. Therefore it’s best, especially if you are going to do more vigorous physical activity, to exercise on a daily basis. In fact, it’s best to exercise at the same time each day, so that you establish a predictable routine as to how one might expect your blood sugars to vary. You need to be careful about exercising immediately before meals because this is the time that you

would normally expect blood sugars to be at their lowest. People can easily precipitate hypoglycemic reactions by over exercising at times of relatively low blood sugar levels. Exercising after meals is less likely to lead to low sugar problems. If you do decide that you are going to exercise before meals or that you are going to exercise for long periods of time, such as in a marathon race, you should check your blood sugar before you exercise and/or have snacks ready to eat during the exercise to keep your blood sugar from going too low. If you're exercising for more than an hour at a time, you should plan to check a blood sugar during your exercise program periodically.

The most important treatment for Type 2 diabetes is appropriate DIET. Diet and associated weight loss are the most important treatment for Type 2 DM, certain types of lipid problems, and high blood pressure as well. Any significant weight loss back towards ideal body weight can have a profound effect on blood sugar levels, diabetic control and lipid levels. This can effectively replace the use of one or several medications used to treat Type 2 DM. Frequently with significant weight loss, many individuals can reduce the use of oral diabetic medication. Conversely, in people taking oral diabetic medication, weight gain can totally negate the positive effects of those medications on blood sugar levels with the end result that blood sugar levels rise across the board both fasting and throughout the day. The classic example of this is the overweight patient who comes into the office and is given an additional diabetic medication to take. They leave, over the next 3 months take the medication, and also gain 10 pounds of weight. What we've achieved is that we've added a new medication to that person's drug list, they've gained 10 pounds of weight and are at a new equilibrium with their diabetes, but unfortunately it's with the same blood sugar level. So, weight loss and weight control, particularly when going on medications, is an extremely important factor in treating diabetes. The same dynamics happen with blood fat (also known as triglycerides, or TG) levels and blood pressure levels. It's not uncommon to see overweight individuals with high triglycerides as much as 10 times normal go on a diet, lose 10 or more pounds of weight, and have their triglycerides drop down into the normal range immediately with the weight loss. High blood pressure can also be very effectively treated with weight loss, allowing us to reduce or stop some of the blood pressure medications that that individual has to take.

Now that we understand some of the relative importance of major issues that affect blood sugar levels in people with diabetes, it becomes a little easier to make good informed decisions about achieving diabetic control goals. With regard to diabetic control, the American Association of Clinical Endocrinologists (AACE) have set a goal for glycohemoglobin (HbA1c) of 6.5% or less and the American Diabetes Association (ADA) has set a goal for HbA1c of 7.0% or less and in some individuals this goal should be modified to lower values. This corresponds to blood sugar values that reflect fasting blood sugars around 100 and blood sugars before meals of less than 120 in general. Blood sugar values will go up after meals depending upon 1) the amount of carbohydrate consumed with the meal, 2) the state of the individual's health and exercise over the last 24 hours, 3) the use of medications, 4) their own pancreas' ability to produce insulin, and 5) other hormonal factors peculiar to each individual. In general, blood sugar values after meals should range under 160 mg%. The reasons for setting these particular goals derive from studies done in the early 1990s, which looked at BG levels and the rate of complications occurring in diabetes. It's clear from these studies

that the higher the BG levels, the greater the rate of development of diabetic complications such as eye, kidney, nerve disease and hardening of the arteries (atherosclerosis). Conversely, there is data that shows the lower the BG levels run, the slower the rate of development of diabetic complications. This is in fact not a stepwise relationship, but a continuous one, so that even small changes in blood sugar levels over a period of time will lead to changes in the rate of development of diabetic complications. We even see that in individuals with BGs in the high normal range, their rate of development of atherosclerosis is higher than those individuals with lower average BG readings. What this means is that for individuals with diabetes, we want to get the BGs as low as possible as long as we don't create problems with low blood sugar reactions or the medications. Again, in general, if we can control the diabetes with other modalities such as diet and exercise, we obviously will need fewer medications and smaller doses of medications to achieve optimal control of diabetes. This translates into lower cost and lower risk of drug-related side effects. So, can you expect to get your HbA1c down into the range of 6.5-7.0% or lower? Yes, if you are willing to work on your diet, exercise, and if necessary take medications as needed.

What about establishing a goal for weight loss? We can calculate your ideal body weight based upon Metropolitan Life statistics tables. Ideal body weight (IBW) is a term developed decades ago by insurance companies to simply look at the average weights of those individuals who live the longest and apply those measurements to populations. The following table specifies Ideal Body Weight based on height:

MEN Ideal Body Weight

Height Feet Inches	Small Frame	Medium Frame	Large Frame
5' 2"	128-134	131-141	138-150
5' 3"	130-136	133-143	140-153
5" 4"	132-138	135-145	142-156
5' 5"	134-140	137-148	144-160
5' 6"	136-142	139-151	146-164
5' 7"	138-145	142-154	149-168
5' 8"	140-148	145-157	152-172
5' 9"	142-151	148-160	155-176
5' 10"	144-154	151-163	158-180
5' 11"	146-157	154-166	161-184
6' 0"	149-160	157-170	164-188
6' 1"	152-164	160-174	168-192
6' 2"	155-168	164-178	172-197
6' 3"	158-172	167-182	176-202
6' 4"	162-176	171-187	181-207

WOMEN Ideal Body Weight

Height

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Feet Inches	Small Frame	Medium Frame	Large Frame
4' 10"	102-111	109-121	118-131
4' 11"	103-113	111-123	120-134
5' 0"	104-115	113-126	122-137
5' 1"	106-118	115-129	125-140
5' 2"	108-121	118-132	128-143
5' 3"	111-124	121-135	131-147
5' 4"	114-127	124-138	134-151
5' 5"	117-130	127-141	137-155
5' 6"	120-133	130-144	140-159
5' 7"	123-136	133-147	143-163
5' 8"	126-139	136-150	146-167
5' 9"	129-142	139-153	149-170
5' 10"	132-145	142-156	152-173
5' 11"	135-148	145-159	155-176
6' 0"	138-151	148-162	158-179

If you are over your IBW, and most people with Type 2 DM are, weight loss will be helpful to you. Exactly how much weight you lose is going to be up to you. If you lose a significant amount of weight, more than 10-15% of your current weight, it's likely that you will see a significant positive impact on the number and/or amount of medications you will need to use to control the diabetes, lipid levels and BP. We'll talk about weight management and dietary programs in another section, but suffice it to say here that the goal for a weight loss program is to find a new, comfortable way of sensible calorie controlled eating habits that will allow you to lose weight over time. It's naïve to think of a weight loss diet as some temporary change in eating habits that will allow you to lose weight and then expect to go back to your old diet and just watch yourself more carefully. That's a sure-fire recipe for failure. A weight loss diet is not a temporary diet. Anything short of a permanent change in the way you deal with food and eating is guaranteed to ultimately fail. Think about this very carefully. A weight loss program is a permanent change in the way you deal with food and eating. This becomes a profound commitment. The good news about a weight loss diet is that it requires only a modest limitation in overall calorie intake (to lose weight over a long period of time). You should expect to have to cut your calorie intake by 200 to 500 calories per day in order to lose weight at the rate of ½ to ¾ pound per week. The only way that this is likely to be achieved on an ongoing basis is for an individual to clearly understand exactly what they are doing with regard to calorie intake, and become obsessive about monitoring adherence to a dietary plan. Calorie intake is so much a part of our culture, so available and so cheap that it is quite difficult to monitor. Besides normal meals and evening snacks we are constantly bombarded with free coffee (with cream and sugar, or other caloric additives), sweetened drinks, snacks at work, birthday parties, candy, gifts of sweet treats, holidays and holiday cooking, dining out, special events and special

parties, cocktail parties, beer, movie snacks, leftovers, desserts, and unexpected events which commonly involve food and/or drinks. To be able to run this gauntlet of events and have an accurate tabulation of your calorie intake requires significant planning and skill. A big killer of many diets is binge eating or the consumption of “hidden” calories (think eating out, or fast-food snacks, or desserts). These brief departures from the usual diet negate the effect of several days’ calorie restriction and make weight loss appear unachievable. The worst kind of diet is one that leads to frustration, desperation and failure, with subsequent weight gain following a period of weight loss. Weight loss experts have studied this “sea-sawing” of first weight loss, and then gain. It appears potentially MORE harmful than not losing weight in the first place. Every day I listen to

For every 15 min of:	**Wt of 165 pounds**	**Wt of 185 pounds**
Lying Still	22.5	28.5
Golf	85.5	109.5
Walking 4 mph	91.50	102.00
Badminton	97.5	124.5
Gardening	102.45	112.50
Rowing Machine	105.5	132.5
Cycling 10 mph	109.95	118.65
Aerobic Dance	117.45	128.70
Stair Climbing	123.0	157.0
Swim 40 yrds/ min.	157.50	173.70
Jogging 5.5 mph	172.50	189.90
Vigorous Rowing	172.50	189.90
Cycling, Fast	172.5	217.5
X-country Ski 5 mph	183.75	199.99
Racquetball	187.5	231.0

people come into the office and provide me and themselves an excuse as to why they didn’t lose weight or why they gained X pounds since their last visit. It’s a game of procrastination that holds serious consequences for those who continue to ignore repeated warnings. Sometimes it takes a major life event such as a heart attack or stroke to change people’s approach to what they are doing.

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It is also very important to have a plan in mind for what dietary changes follow once you achieve your weight goal. It's just not enough to go back to old ways of doing business. And you need to have self-monitoring mechanisms in place to assure that it doesn't even begin to happen. Based on what your current weight is and what your IBW should be, you can decide whether it is appropriate to consider a modest weight loss program or whether you need to create a more stringent long-term program to achieve your weight loss goals. If you have been heavy for most of your adult life, particularly if you were also heavy during your teenage years, it is going to be VERY difficult to get your weight down to anything lower than your teenage weight. Under those circumstances, it probably would be more appropriate to set an intermediate goal of getting your weight down to some intermediate level between your teenage weight and current weight. If you are successful achieving that, then you can reassess your life situation at that point and decide if further goals with regard to more weight loss would be appropriate for you.

The National Weight Control Registry, established by researchers at Brown University and the University of Colorado in 1994 has studied the largest successful cohort of men and women who have lost a minimum of 30 pounds of weight and kept that weight off for 1 year or more. The weight loss was achieved through diet and exercise (89%), diet alone (10%), and exercise alone (1%). Most (55%) had joined a weight loss program, but some (45%) did it on their own. The participants who had the greatest success did the following:

1. Eat a low calorie diet (average intake 1380 cal/day, 27% fat)
2. Engage in a high level of physical activity (2550 kcal/wk for women, 3300 kcal/wk for men)
3. Limit TV viewing (62% watched < 10 hrs/wk)
4. Weight yourself daily, or at the least twice weekly
5. Maintain diet consistency, even on weekends.
6. Limit diet variability. Keep fewer varieties of food on hand.
7. Eat breakfast every day (80% did).
8. Limit fast food (less than once/week).

What should your goal be for an exercise program? As previously mentioned an exercise program for treating diabetes will function optimally if organized as a daily routine of exercise that conditions large muscle groups. Typically this will involve cardiovascular training with activities such as walking, dancing, swimming, jogging, bicycle training, tennis, racquetball or aerobic sports. Cardiovascular conditioning begins to occur when an individual trains at a heart rate of 80% or more of predicted for 30 minutes a minimum of 3 days per week. Cardiovascular conditioning occurs more rapidly with longer workouts (up to 1 hr per day) and more frequent exercise intervals (up to about 5 days per week). Beyond that, there is the potential to see some deterioration in overall fitness, as the body may not have adequate time to repair itself and accumulate energy supplies for the next exercise session. But you don't have to achieve cardiovascular conditioning levels of exercise to burn calories and improve glucose utilization. The following table gives examples:

Calories Burned

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Here again, the goal needs to be sensible from your perspective. You should consider something that is achievable, comfortable, and sensible for your lifestyle. For some people, it means joining a gym. If that is your decision, you need to know how to use the equipment, develop a plan as to when you are going to go, how you motivate yourself to keep up the program, what you do when you travel, etc. I personally like the idea of meeting exercise goals while achieving some other desirable activity, like watching a movie, listening to audio CDs, or studying (see pictures below). That way the motivation to maintain the activity is multifactoral and can be truly enjoyable. I once had a diabetic patient whose workout was gardening the yard 4 days a week – mowing, planting, weeding, trimming, and raking. He spent 1 hour doing that with each session, his yard was beautiful and the envy of the neighborhood, and he was very fit. Another option is to have your spouse or friend participate with you, so you establish a social aspect to the activity as well.

What about lipid goals? Perhaps a little background information is in order first. Over the last 30 years our knowledge of cholesterol has expanded dramatically. “Lipids” is a term that encompasses both blood cholesterol and blood fats. Blood cholesterol can be divided into 3 broad categories: Very Low Density Cholesterol (VLDL– cholesterol mostly derived from the gut after meals), High Density Cholesterol (HDL– derived primarily from liver synthesis) and Low Density Cholesterol (LDL– derived from breakdown of VLDL particles in muscle and fat tissue and from liver synthesis). HDL is known as “good cholesterol” as it helps to transport excess cholesterol from LDL cholesterol particles (“bad cholesterol”) in the peripheral circulation back to the liver where it can be secreted into the gut. So in general the goal is to not have excess levels of total cholesterol, and to have relatively higher levels of HDL and relatively lower levels of LDL cholesterol. Blood fats (also known as triglycerides) can also predispose to hardening of the arteries (atherosclerosis—the build-up of cholesterol and fats on the insides of blood vessels, blocking blood flow). So again, here, the goal is to keep blood fat levels low.

You may be aware that the goals for lipid (blood cholesterol and fat) levels have changed several times since 1990. These changes parallel the introduction of newer and more potent medications that have made it possible to lower lipid levels and observe the outcomes of those interventions. Forty years ago we had something called the “lipid hypothesis” in medicine, that roughly said, “We think that unusually high cholesterol and blood fats contribute to atherosclerosis, and conversely, if you lower lipid levels, you will reduce the risk of atherosclerotic events.” It was a hypothesis because we had very little in the way of medications that actually worked to significantly lower lipid levels. Then came the first of the statins (a family of cholesterol lowering drugs), Mevacor, and with its increasing use we began to see data that did indeed indicate a protective effect against new heart disease and atherosclerosis. As more drugs came out, and these more potent medications and combinations of medications were studied, we did indeed see better and better responses in patients with lipid problems. As a result, with the advent of each new generation of cholesterol lowering medications we are able to achieve lower and lower cholesterol levels, and the

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intervention studies are becoming more and more aggressive at lowering cholesterol levels, and they continue to show better and better results. For the first time ever, beginning in 2006 we now have studies that show REVERSAL of atherosclerosis in some patients with very aggressive measures at lipid lowering. So the goals for lipid levels are as follows: In 2001 the Third Adult Treatment Panel (ATP III) of the National Cholesterol Education Program issued new lipid-management guidelines recommending an LDL-C (bad cholesterol) level of 100 as the target goal for high-risk patients (people with heart disease or diabetes). For otherwise healthy adults, total cholesterol levels should be <200 mg%, HDL levels >40 mg% in men and >50 mg% in women, LDL levels <130 mg%, and triglycerides <150 mg%. For individuals who have diabetes or established vascular disease or heart disease, total cholesterol levels should be <200 mg%, HDL levels >40 mg% in men and >50 mg% in women and LDL levels <100 mg%. The 2004 update of the ATP III guidelines was even more aggressive and advises clinicians to consider an LDL-C level of <70 mg/dl as the ideal goal for very high-risk patients. (Very high-risk patients are individuals who have coronary heart disease (CHD) or disease of the blood vessels to the brain or extremities, or diabetes, or multiple (2 or more) risk factors that give them a greater than 20 percent chance of having a heart attack within 10 years.)

To summarize and simplify, if you have diabetes, your total cholesterol levels should be <200 mg%, HDL levels >40 mg% in men and >50 mg% in women and LDL levels <100 mg% (ideally, <70 mg%). In general, the lower, the better.

What should your BP (blood pressure) goal be? Again, we have data from diabetic studies that show in general, the lower the better. “Normal” BP is considered less than or equal to 120/80 mm Hg (mercury). If BP goes too low, not enough blood will be supplied to the brain, and an individual will pass out. How low is this? It varies, but usually anything above 90/50 is going to be generally safe. Blood pressure goes up when you exercise, get excited, anxious or angry. If you check you BP at home, you should check it when you are angry or excited, as well as when you are relaxed and comfortable to see the full range of its excursions. The heart is a pump, and its primary function is to pump blood under pressure to all the organs and tissues of the body. If the heart is pumping at a higher pressure level, it has to do more work per minute than if it were pumping at a lower pressure level. This stresses the heart and increases its requirement for nutrients and oxygen, which is not good if you’ve got atherosclerosis. Increased blood pressure over time can also damage the kidneys, increase the risk of bleeding in the eyes of people with diabetes, and promotes more rapid development of atherosclerosis. The same diabetic studies done in the early 1990s that showed the relationship between diabetic complications rates and blood sugar levels also showed that lowering BP from elevated levels to the normal range had an even greater effect on lowering diabetic complication rates than lowering blood glucose levels into the normal range. The blood pressure goals recommended by the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7, 2003) for diabetics is a blood pressure less than 130/80. The JNC 8 goals in 2014 were relaxed a bit because of new data that suggest a systolic blood pressure goal of <150 is adequate. Despite this, the JNC 8 opted for a goal level of <140/90 in adult patients with diabetes and hypertension.

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Motivation is the key to changing lifestyle. When people really come to understand why lifestyle changes are important—the cost of medications, the complications and disabilities that come with chronic illness, the effects on lifespan and quality of life—they gradually develop the motivation needed for creating change. Psychologists describe this as the pre-contemplation phase of instituting change. It's really the period of time wherein one observes that certain behaviors can lead to bad outcomes. Once one becomes aware that he does have a problem, he enters the contemplation stage of change (Stage two). This is an examination of the pros and cons of making a change. Stage three is the preparation or planning stage of change. Failure in making change happen may be due to poor planning, not fully appreciating the difficulty of making change, not recognizing barriers to change, or not having a fall-back plan to overcome initial failure. Stage four begins when someone takes action to make the change happen. This requires self-confidence and self-efficacy. It requires the individual to continually remind themselves of the reasons for the change and reward themselves for each step made successfully in the pursuit of that change. Stage five is the most challenging of all. It requires making the new behavior patterns permanent, and erasing or finding ways to inhibit the old behaviors (- old behavior pathways need to be permanently blocked so they can't be entered automatically or by mistake or in haste.) People who are successful at change monitor themselves regularly, reinforce the change at every opportunity and incorporate the change into their daily lives. Only when the change is incorporated into the new lifestyle in such a way that the individual derives real pleasure from it is it really likely to become permanent and self-sustaining.

So what are your barriers to success likely to be? I can give you a few examples:

- Not fully appreciating the consequences of failure
- Not fully appreciating the benefits and joy of success
- Having an incomplete plan, a poor plan, not planning for mistakes, not planning for failures, not planning alternative pathways to reach success
- Unreasonable expectations
- Not planning on ways to block old familiar behaviors
- Not seeking help from spouses and loved ones
- Not setting the right priorities
- Relying too much on medications
- Not recognizing the importance of weight loss and weight maintenance
- Looking for short cuts and quick fixes.

If you're like most individuals, setting your goals and then developing and executing a plan to change your life will not go smoothly and without a hitch. If you're like most individuals who succeed in making those changes, before you begin you will seriously consider how to deal with those "bumpy roads" and initial failures to reach your ultimate goal.

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