

[MUSIC PLAYING]

**DAVID
ROMETO:**

American Heart Association, American College of Cardiology, and the Obesity Society have joint guidelines that cover evaluation, diet interventions, behavioral interventions, who to recommend for surgery, as well as very low calorie diets. And the Endocrine Society guidelines, which focus on the prescription medications. I'll spend a little time on that, since so many of the medications available have come out since 2012. So this is definitely an update. And AACE, which is the American Academy of Clinical Endocrinologists also have some guidelines that have some specific information on exercise. And then a brief summary.

So a very famous local Endocrinologist has said this: Obesity is a chronic disease as much as hypertension and hyperlipidemia are chronic diseases treated like a chronic disease, and treated early. So I'm not going to spend time convincing you that obesity is a disease. I'm not going to show you all the colorful America charts showing how bad obesity is and what it does. I'm going to assume you all know this, and that you all agree with me on this statement, and then we're going to move forward.

So this is a 2013 AHA/ACC/TOS guidelines. And for those of you who are in any part of the obesity field, these are the powerhouses nationally and internationally, well-renowned obesity experts, including our own John Jakicic, who's an exercise physiologist researcher at University of Pittsburgh is on here. So you can all read these. Get it? But I am going to actually go through this briefly to hit all these topics, because they are all such a high yield and important points to be made.

And the first is to identify patients who need to lose weight. And I love that phrase. And you do so by measuring the BMI, their height and their weight, calculate the BMI, and also the waist circumference. And when you find out the BMI, and you tell the patient what their BMI is, you then convey to them what that means in terms of risk. So BMI is over 25, the overweight category and above, is an increased risk of cardiovascular disease. And BMI over 30 is even a higher risk, but also higher risk of mortality from all cause. And advise patients who are in the overweight or obesity category that the higher the BMI, the higher the risk for CVD, Type 2 diabetes, and all cause mortality. You can all debate, "Oh no, I'm muscular," and things like that but, statistically the higher BMI, the higher these risks and people need to know that.

And then waist circumference specifically adds another level of risk, and the higher the waist circumference the higher the level of risk of Type 2 diabetes, all cause mortality, and cardiovascular disease. And there are cutoffs for that as well, which I'll get to in the next slide.

So how does one measure waist circumference? Well, you need to have a tape measure of some kind, and you measure around the waist, parallel to the floor, at the level of where the-- below the bottom rib on the midaxillary line, on the side. So I have patients poke themselves in the sides, where's the gap between the ribs and the pelvis. You put the tape measure around there, and spin around, and see how many inches it is. And the cutoffs that we use-- and this is actually for Caucasians or European Caucasian Americans-- is that, women with a waist circumference greater than 35 inches, and men with a waste circumference greater than 40 inches. That's a cutoff for a change of significant risk of cardiovascular disease, all cause mortality, and Type 2 diabetes. Because what you're really measuring is the amount of visceral fat, fat inside the abdomen, that contributes to the metabolic components of the illness.

And in the chart from the NIH as well here, shows that that cutoff of 35 or 40 on waist circumference, changes their level of risk in certain ranges of BMI. If someone's BMI is between 25 and 30, it bumps them up to high risk. If someone's between 30 and 35, it bumps them up to very high risk. Someone with a BMI already over 35, you should probably still measure the waist circumference and tell them what it is, and have it be a target to decrease. But it doesn't actually bump them up in terms of broad categories. Their obesity risk is already so high from the BMI at that level.

So that's all talking about risk. So if you have a patient who's problem is their weight, and you want to tell them that they might get sick in the future, and that they should do something about it. But a lot of patients with obesity and overweight already have medical problems that are caused by, or contributed to, by their condition. So you need to tell them that the benefits of losing weight, for the conditions that they have. So a moderate, or I'm sorry, a modest 3% to 5% weight loss can lower the blood sugar of the triglycerides, and even greater, and also prevent the rate of transmission too from pre-diabetes to diabetes. But a greater weight loss can lower the blood pressure, lower LDL, increase HDL, and further decrease triglycerides in blood glucose. So this 3% to 5% weight loss is enough. But again, the more weight loss, the better.

And then, so what should one recommend? Diet, of course. A lot of people have different opinions as to which diet should be recommended, and they get into fights about this diet versus that diet, no you're wrong, that's going to kill people. So they take a very broad approach to this, but it's all very evidence-based as well in these guidelines, and saying, if you can get them on a diet that has been shown to be effective, that creates a calorie deficit, in which they lose weight, that is the right diet for them.

So a couple broad categories. Just having a calorie target, 1,200 to 1,500 calories a day for women, 1,500 to 1,800 calories a day for men. They use these numbers, because these numbers were used in a lot of large trials that met their evidence criteria to become the guidelines. And the other is, a calorie deficit of 500 or 750 calories a day. So that involve some calculation of how much you think someone's metabolic rate is, and then have them take in 500 to 750 calories less than that.

And then the other diets that don't involve calorie counting, are just restricting a certain class of food. So we've seen that in low carb diets, for example, you tell a patient that they can't have carbs, they end up eating a lot less calories without counting any calories. But other diets are similar to that. By restricting a certain large class of food, the patients will eat significantly less, create that calorie deficit, and lose weight. And I have there at the bottom, all of these on average, eight kilogram weight loss, 5% to 10% weight loss, if these diets are followed well.

But of course, the diet that is going to work is the diet the patient is going to stick to. So that's where a lot of this patient decision-making, shared decision making, is important. To offer different choices and let the patient choose the one that, in their experience, or in their opinion, that they'll do the best with.

The other thing to remember is that was, what diet should be prescribed. And I make that point separately. So you want to prescribe a diet. OK. Just like you would prescribe a medication, you don't recommend a diet, you prescribe it. And that is the wording that is recommended. Just like telling which patients need to lose weight and then you prescribe. So some of the strong words here are very important.

But prescribing a diet doesn't mean a patient is going to stick to a diet. In fact, prescribing a diet is not effective at having a significant number of patients stick to that diet, and then lose 5% to 10% of their weight. They need to be enrolled in a lifestyle program, where they're getting help. And so a lot of studies have been done to show what is enough of a lifestyle program, and here are their conclusions.

The weight loss program should be at least six months long. It should have at least 14 face-to-face visits with a trained interventionist. And that that interventionists should focus on the diet that creates that calorie deficit through calorie restriction, and increasing physical activity and exercise, but also behavior change subjects to be addressed.

And after that, maintenance. Obesity is a chronic disease. Once you lose weight, obesity isn't gone. Even if you don't have that weight criteria anymore, your body will try to regain all of that weight, unless you actively practice weight maintenance. And so weight maintenance is a part of any weight loss program. And they give the criteria of monthly contact, or face-to-face visits for one year at the end of a six-month weight loss program.

And in weight maintenance you're going to have to exercise more than you did the last time you weighed this, or more than you did even during the week loss, because you need exercise a lot to keep the weight from coming back on. Your metabolism has slowed down as a result of the weight loss, because that's how our bodies work. 200 to 300 minutes a week is the amount of exercise that is required to significantly maintain your weight. And I think that Dr. Jakicic's research helped contribute to this data.

Then there's bariatric surgery We have the bariatric surgery criteria have been known, in terms of BMI cutoffs, BMI over 40, or BMI over 35 with a co-morbidity for bariatric surgery. But they phrased this here pretty importantly. For patients who are motivated to lose weight and have not responded to behavioral treatment, with or without pharmacotherapy, with sufficient weight loss, to achieve targeted health outcome goals, bariatric surgery should be an option. So, I have on there, at the bottom, an example of this.

You have a morbidly obese patient with Type 2 diabetes on a lot of insulin with a bad A1C, they enroll in a lifestyle program, they lose 5% of their weight, their A1C gets better, they are on less insulin, but their BMIs still 36, and their A1C's still eight. OK. They didn't fail their weight loss program. That was a successful weight loss program. It reached this 5% weight loss.

But if their goal was to get off insulin, or if their goal was an A1C under seven, they did not achieve that goal with an intense lifestyle program. So they need something else. So that's why it would be appropriate to use gastric bypass surgery. Gastric bypass surgery is not for people who can't diet, it's for people who need a lot more than diet. Just like you might put someone on one blood pressure medication and their blood pressure medication only lowered them 10 points, and you need to add a second or third blood pressure medicine. Or you put them on medical therapy for heart disease, and they eventually needed a triple bypass surgery. That's not a failure. It's just the severity of disease required surgical treatment.

So they have a very long convoluted algorithm treatment and work-up algorithm included in these guidelines, but I'll jump to this little red box down in the bottom. It mentions the pharmacotherapy, as well, for obesity, and the cutoffs there, similar to the bariatric surgery, they can have a 30 cutoff, regardless of co-morbidities, but a BMI of 27, if you have co-morbidities from the weight. And that pharmacotherapy should be considered, and bariatric surgery cutoffs as well.

But look at where it is on there. You might not be able to see it but, at the first discussion of, OK this patient needs to lose weight, we're going to recommend a lifestyle program and all of these things, that that's the time to discuss medications, and that's the time to discuss surgery, not after someone has done a program and then you tell them, you didn't do good enough, now you need to do this other thing, that medications can be prescribed the first time a patient does a weight loss program. So there is no recommendation they should try a weight loss program without drugs before you consider them doing the weight loss program with drugs.

And there is a section here on very low calorie diets. The definition of that is less than 800 calories a day. And they don't recommend that everyone do this, but they do mention that it does work, and that it should be reserved for patients who can be monitored by a medically supervised program with an intense lifestyle program, and that there are some potential risks for rapid weight loss, which is why medical monitoring needs to occur.

Most well-known probably is gallstones, but also some electrolyte abnormalities, depending on the patient's other conditions and what medications they're on. And here is the-- probably the best clinical trial of a very low calorie diet. 517 patients, they had weekly visits, face-to-face, with an interventionist for six months. 420 to 800 calorie-a-day range for the first three months, then a gradual increase in calories, up to 1,200 to 1,800 calories a day by the end of the six month trial.

And what we see here is the women-- these are the completers-- on the right, the women had a 22.6% weight loss average at the end of six months. Men had a 25.5% weight loss average. These are very close to the numbers that you see in the first six months after a Roux-en-Y gastric bypass surgery. So they are losing weight as fast as people who've had surgery. And that's the completers. There's no non-completers in the gastric bypass surgery. You had it done.

But in the left upper panel, you see the dropout rates. About 40% of patients did not finish the entire six-month program. They actually dropped out at a similar rate throughout the program. And they didn't drop out because they weren't losing weight. The lower left shows that they were still in this 15% to 20% weight loss range, the people who dropped out.

And they did a one-year followup at the end of the six months. 118 of them were followed and average weight loss was about 25 kilograms, and they gained back less than 10 in the following year. So about 20% maintained all of their weight loss for that year, 60% maintained greater than 10 kilogram loss, and then 11% gained it all back.

So the next guidelines I'm going to talk about are the Endocrine Society guidelines. And these are the ones that talk about obesity medications. And I have here this picture. There will not be a quiz regarding this picture, but this is just to demonstrate that the medications we use for obesity are medications mostly that affect the signaling through the hypothalamus that affect appetite and energy intake.

And here's another schematic of that, showing the different nuclei in the brain stem and hypothalamus. And you see at the top, the anorexigenic signaling and anorexigenic signaling. Am I going to eat, am I not going to eat? Am I done eating, am I going to keep eating? These things are behaviors that are controlled by your hypothalamus. And then on this image as well, where the drugs individually act.

I'm going to go through the drugs one by one. There's not that many. Phentermine has been around since the 1960s, and it's dosed 30 to 37.5 milligrams once a day, and it is a sympathomimetic amine you see in the little picture here. It works on norepinephrine releasing agent on these dopaminergic neurons. About 3.6 kilogram weight loss above placebo in the trials. It was only approved for short term use because they didn't have long term studies when it was initially approved, and no one's going to do that study in Phentermine, so it doesn't have a long term use FDA indication.

A lot of different symptoms because it's a sympathomimetic amine, kind of a stimulant effect on the cardiovascular system. So sympathetic type side-effects. Contraindications however, include someone with hyperthyroidism, not if it's treated hyperthyroidism is fine, untreated hyperthyroidism, inadequately treated hypertension, coronary artery disease. And included here is pregnancy and breastfeeding, but pregnancy and breastfeeding are contraindications for all weight loss drugs. There is no obesity medication approved for pregnancy. A couple other specifics here. I mentioned hyperthyroidism, glaucoma is also on there, and I think that's acute angle glaucoma.

So next is Orlistat, which came out in 1999. Orlistat, 120 milligrams three times a day, taken with meals that contain fat. And the reason is, it's a lipase inhibitor, so the fat, the triglycerides in the inside the lumen of the gut, will not be broken down, so they can't be absorbed into the circulation. So that means that those fats end up coming out in the stool, which causes some issues. The malabsorption of fat soluble vitamins is something needs to be looked out for, but also that's the most common side-effect that causes patients to stop, which is the steatorrhea, oily leakage, and other things that you've heard. People make fun of the side-effects of Orlistat if you've been paying attention.

It could also affect the absorption of medications and the metabolism medications, so Cyclosporin, Levothyroxine, and Warfarin, anti-epileptic drugs, levels have to be adjusted when this medication has started. They do have some data from the Orlistat trial that got it approved, showing here how much weight was lost. About 10% weight loss with a placebo at about five. And during the weight maintenance phase of this trial, they did a crossover, and what you see is, the patients who stopped the Orlistat started gaining weight back. And the people who restarted the Orlistat, started losing weight and came to about the same place. So these guys didn't quite make it the whole way up, but what we can see is, this medication works when you take it, and then it stops working when you stop taking it.

So Lorcaserin is the next. Now this starts the recent class, the recent group of medications that have been approved. Lorcaserin is-- I'll say the brand name out loud because no one knows these drugs and it's important for people to be familiar with them. It's Belviq. And it's 10 milligrams twice a day by mouth. It's a serotonin receptor agonist, 5HT_{2C}, and that's important because of the issue with fen-phen was that Fenfluramine was a 5HT receptor agonist, but it was nonspecific, and it caused heart valve problems. The specificity of this drug for this receptor means it does not cause those valve problems, and since its inception they have looked and shown no increase in heart valve disease, so it does not need to be stopped.

Again, 3.6% weight loss above placebo and since 2012, nonspecific symptoms related to this drug, again not for pregnancy. And this is not a contraindication, but it's a concern of possibility is it's interaction with other medications, psychiatric medications, SSRIs, does it cause serotonin syndrome in combination with other drugs? So that's a caution, not a contraindication. They actually haven't shown this happening, but it's something, because it's a serotonin receptor agonist, it is to be of concern.

And here's the data for Lorcaserin. Again, about eight kilogram weight loss, compared to 5 kilogram weight loss with placebo. You see in these placebo groups, these patients are losing weight, because all of these weight loss trials, they're in an intense lifestyle intervention with calorie restriction and exercise and behavior change. So you're adding this drug to a weight loss trial, or a weight loss intervention. Taking the drug by itself, that is not the indication for these medications. And what you see, again, significant weight loss. And then when you stop it, they actually went right back up and matched the patients who were just in the weight loss intervention without the drug.

And with the new wave of medications that came out from the FDA for long term use. The other stipulation was not just to say what the average weight loss was compared to placebo, but what percentage of patients lost more than 5% of their weight. So in the graph next to it, you see 47.5% of patients met the minimum threshold of 5% weight loss, and they also show how many had 10% weight loss.

Next is Phentermine-topiramate. We talked about what Phentermine does. Topiramate is a GABAergic modulator. And so they're not really sure how that connects to the other locations in the hypothalamus. But it is a migraine prevention medication and an anti-epileptic. The doses for that, the full dose is 15 milligrams of Phentermine, so it's half the dose when it's a standalone medication. And Topiramate is 92 milligrams, which is about a half to a fourth of the full dose of Topiramate when used for anti-epileptic. And 8.6% kilogram, or an 8.6% weight loss above placebo. So that's significantly greater than the other medications we've talked about so far.

Approved in 2012. The side effects actually, the list is shorter than the list for Phentermine by itself. And the way people describe this is, that the side-effects of the medications kind of counteract each other, so one is an upper, one's a downer. And pregnancy, of course, is listed as well here. Hyperthyroidism and glaucoma, just as they were for Phentermine by itself. But this is a little different.

This medication, when it came out, had a Rens attached to it, because it's not just a, oh stop this when you get pregnant medication. Topiramate is a [INAUDIBLE], and its effect is in the early first trimester. So you do not prescribe this to a woman of childbearing age unless she is reliably on one or two forms of birth control. And actually, what you're supposed to do is recommend they get a pregnancy test before they start, and that they get a pregnancy test every month while they're on it. So very extra super cautious.

Here's the effectiveness of this in the trials. We're looking at more like 12% weight loss compared to the placebo at 2% weight loss here. And then when you look at how many had more than 5% weight loss, very significant 79% of patients hitting that 5% weight loss. And they wanted to showoff, so they kept going up and up and up. How many patients had more than 20% weight loss? More than 15% of patients had a greater than 20% weight loss.

And so that's a combination drug. So the other combination drug is Naltrexone and Bupropion, neither of which are weight loss drugs. Naltrexone is used in opiate dependence and Bupropion, of course, an antidepressant, but also used in smoking cessation. The dose for this is 32 milligram/360 milligram, but when you dose it, you start with one pill a day, and go up by a pill a week. You might do that with Metformin as well. I used a similar pattern, and that's because the side effect of nausea is quite common, because of the Naltrexone component. And so, if you get there gradually, they don't have as much side effects.

Naltrexone is an opiate inhibitor and the Bupropion works in the same pathway as Phentermine. So Bupropion is kind of related to the sympathomimetic amines and has some similar side effects. And here's the effectiveness here. These are again are completers in the trial. 8% weight loss versus 3% weight loss at one year, and 65% to 69% patients hitting 5% weight loss.

Those are all the oral medications. So what you can see is, these medications work. There's no question that they work when they are used in a weight loss program. And they work better than placebo, and they work while you take them, and they work for one to two plus years. And then they stop working when you stop taking them.

So here's Liraglutide. Liraglutide is also a medication for Type 2 diabetes under a different name. That's an injectable GLP-1 agonist, and the dose for it as a weight loss medication is three milligrams once a day. And it comes in a convenient pen, just like the insulin pens. And this was approved in 2014. 5.8 kilogram weight loss above placebo. Nausea and vomiting, similar to what you'd expect with other GLP-1 agonists. Pancreatitis as well. They put that under common side-effects. I would disagree with the common moniker of that.

But at higher doses, there have been reported cases of pancreatitis that were not seen at that level in the placebos. And the contraindications there are the same as with the Liraglutide for Type 2 diabetes, medullary thyroid cancer, and men2 patients should not use it. And that comes from the rat or mouse data, in terms of there were some cases of medullary thyroid cancer. This hasn't actually been shown in humans, but it still carries that black box label, not to use this medication because you don't want to give someone medullary thyroid cancer, even if the risk is not quite demonstrated yet.

Oh, and the mechanism. Where Liraglutide is working, GLP-1 receptors in the dorsal vagal complex, this is where the vagal afferents come through, where Pramlintide also works, or Symlin, but there are some receptors also in the POMC cart neurons, and there's also receptors on the beta cells, there's also receptors in the gut. So the receptors are all over the place. But it does actually stimulate the receptors in the central nervous system.

And here's the data used in the trials to approve Liraglutide. And on the lower left, the bottom upside-down purple triangle, shows in the 12%, 10% weight loss at one year. And then there was a crossover, everyone started taking it, and you see they all kind of end up in the same place at two years.

The upper right is actually an interesting trial. It's called the Scale Study. And they were measuring how patients, how the medication would work as a weight maintenance treatment. So they had patients lose 5% to 6% of their weight, with a diet intervention, lifestyle program, calorie restriction. And then when they hit 6% weight loss, then they put them on the Liraglutide versus the placebo. They were expecting the placebo group to gain their weight back, and they were expecting the Liraglutide people to keep the weight off. But their placebo patients did really well. They did keep the weight off without being on a weight maintenance medication. And the Liraglutide group lost another 8% of their weight.

All right, I'm done with the prescribing medications for obesity. But this is almost equally important, if not more important, because it will probably more frequently be done. Changing the medications that they're already on for the other things they have to favor weight loss, or to at least keep them from gaining more weight.

For diabetes, that involves using first and second line agents that are weight neutral, or cause weight loss for Type 2 diabetes, because most of those patients will be in the overweight or obesity category. And then, patients who have Type 2 diabetes and need to be started on insulin, they recommend to include another medication that is a weight loss inducing diabetes medication at the same time as using the insulin to prevent the weight gain associated with starting insulin in Type 2 diabetes.

So you don't want a patient to gain a lot of weight on insulin and then try to get them to lose it. The one thing I could try to convey to you is, prevent obesity, prevent weight gain. If someone's already obese, get them to lose weight now. Don't let them gain 40 pounds and then try to get them to lose the weight, because we have a set point. The highest weight you've ever weighed is the weight your body is going to defend. So you don't want to let weight gain happen. You want to prevent it.

And so the other classes of drugs also have members that cause weight gain, so even in blood pressure, using ACE inhibitors, ARBs, the calcium channel blockers, instead of beta blockers, if you're just treating hypertension. There are some, of course, cardiac conditions that do require beta blockers.

Antidepressants Bupropion we talked about, but Sertraline and Fluoxetine tend to favor weight loss. But on the other end of the spectrum, Paroxetine and Amitriptyline are significantly known for weight gain. And the anti-psychotics, all the atypical antipsychotics, cause weight gain. If a patient needs to be on an anti-psychotic, and you might even want to have a conversation with the psychiatrist that's treating the patient about whether they actually need to be on an atypical anti-psychotic, is the question of putting them on one that's not as bad. So Aripiprazole, and Lurasidone, Ziprasidone are the three that aren't as bad, and that Clozapine and Olanzapine are the worst.

Then anti-epileptics. Topiramate and Zonisamide commonly are weight loss inducing phenytoins neutral. Gabapentin and Pregabalin are in the weight gain category. So you've got a patient with fibromyalgia, who probably is in a lot of pain because of their obesity, and then you add Pregabalin, and then they gain more weight, and then they're in more pain.

All right. So the last guidelines I'm going to talk about are the ACE guidelines. Now ACE is a clinical endocrinologist, so these really are out in the field, mostly seeing patients. These aren't research or academic members. The leadership there are, of course, researchers. And in their guidelines-- I'll just go through real quick.

They do mention a lot about the diet, they don't pick one over another, but there are differences between the diets. The low glycemic load and the low carbohydrate diets, even though they all cause about the same amount of weight when you them to everybody, those specifically have benefits in glycemic control, better glycemic control on less medication. That's also true of the Mediterranean diet. So picking a diet specifically based on their condition.

So every trial of diets in Type 2 diabetes shows that, yeah they all lose weight, but low glycemic, low carb, and Mediterranean always beat the low fat diet in terms of A1C and the amount of diabetes medication required. And they also compare the trials of the drugs, even though these weren't head-to-head trials, and the populations were probably different, but they did put it on here. And again, showing Phentermine until Topiramate had significantly higher results compared to placebo, than the others.

Then they have this convenient two-page sheet here, where you can look up the conditions your patient has and see which drug should I use, or which drug should I not use, in a patient who has this. So a very very convenient thing to have if you're going to prescribe obesity medications as you should, having this printed up, or something like that, in your office, just to take a spot check and say, "Yes, I should use this one."

And then exercise guidelines. These are in the ACE guidelines, but these are the two references that they use, American College of Sports Medicine and the American College of Sports Medicine collaborated with the ADA on another trial. Another guideline. And what they recommend for aerobic exercise is greater than 150 minutes of aerobic exercise per week, moderate intensity. This is for weight loss. This is during weight loss. And also resistance training two to three times a week. And the resistance training, single set exercise, is using major muscle groups, a load that permits 10 to 15 repetitions before fatigue, and progressing over time to using heavier weights, and doing more sets.

So anyone who's lifted weights knows this is how you're supposed to lift weights to get stronger and build muscle mass, and that that is important in a weight loss program to preserve muscle mass so that you don't lose it all while you're losing weight. But again, they use the word prescribe. So you want to prescribe an exercise regimen. You actually want to write an exercise prescription. These things matter to patients, in terms of changing behavior when the use of prescription is used. And also using exercise physiologists or fitness professionals to help the patients, either personalize their exercise regimen, or just to help them with compliance and an followup.

I will caution though, that one of my biggest pet peeves is patients who tell me about their. physical trainers, personal trainers, who are doing tremendous things with them in terms of exercise, but the personal trainers tell them, well, if you're exercising like this, you need to eat 3,000 calories a day. They are wrong. You do not have to eat 3,000 calories a day if you are trying to treat your overweight or obesity.

In summary, these are my big points I want everyone to remember all of these, and look at these slides, and remember I'm a primary care doctor, I'm an internist, this is my responsibility. Obesity is a chronic disease, as much as hypertension and hyperlipidemia, or chronic diseases. Treat it like a chronic disease. And treat it early. Why early? Because of the complications of the disease itself.

But also because they're going to continue to gain weight, and then it's going to be harder to lose after they gain more. So identifying patients in your clinic, if you could. My patient's BMI went from 29 to 31 since the last time I saw them. Now's the time to have this discussion.

Of course, you all understand that when patients come in for acute visits, that is not the time to address their obesity. But when they are coming in for routine care and preventative medicine, that is absolutely the time. You don't want to wait till a patient looks like they need gastric bypass to address their risks from their weight.

Identify and quantify overweight and obesity BMI with waist circumference. And BMI annually. And discuss the risk of cardiovascular disease, diabetes, and death. And discuss which conditions they already have that will improve with weight loss. Is not just this, it's their arthritis, it's their sleep apnea, it's their fatty liver disease. Change their current medications to favor weight loss. So even if you're uncomfortable with weight loss drugs, you could still do this. Recommend a six-month intense lifestyle intervention, meeting guideline criteria, four team visits, significant calorie restriction, greater than 150 minutes of aerobic exercise a week, resistance training two to three times a week, exercise prescription, fitness, professional.

You all may be saying, I don't have one of those. How do I refer to that? That doesn't exist. And that is a common frustration. Now the community programs like Weight Watchers and some of the others, do meet these criteria, or have had studies that have been done to show their effectiveness.

So, if you don't have this, you can use commercial programs. But I also encourage you all, as leaders in the community, to get together and find a way to have a program like this offered. Be entrepreneurs. And you might need to get a couple practices together to hire one dietitian to be available for an hour every other week, and carry out this type of intervention. The system is not solving this problem for us, and our patients need this type of intervention.

And then a one-year maintenance program monthly, 200 to 300 minutes a week, of exercise, self-monitoring of weight and calories. That's another part that's very important. Patients will regain their weight. If they weigh themselves and write it down every day, or once-a-week, at least, if they measure their food with a scale, and a measuring cup, and keep track of their calories on their phone app, or even just on a handbook, no book, those are the behaviors that have been shown to be successful for weight maintenance. Otherwise, you will think you're eating well, you will think you're eating small portions, but your brain, which wants you to get back up to your set-point, will make you think that a one cup is actually three cups.

All right. And then discuss, offer, prescribe obesity medication for BMIs over 27 with co-morbidity, and BMIs over 30. And to discuss, offer, and refer to bariatric surgery for BMIs over 35 with co-morbidity, or over 40. We need to get over our biases against doing these things. Our patients need their obesity to be treated.

The other thing I wanted to mention here before I finish is, you might have heard this, because it's an update, the Biggest Loser on NBC. They did some studies. Six years ago they did this study that showed that these patients' metabolic rate after losing weight, was 500 calories a day lower than what they would calculate for someone at that weight.

So when you lose weight, your metabolism slows down because you're smaller, that's predictable. But it slows down another 500 calories a day because your body wants to regain the weight. It's called metabolic adaptation. It's normal. It doesn't mean there's something wrong with your thyroid.

And these patients, by the way, they were doing nine to 30 hours of exercise a week. This was a high intensity exercise, weight loss intervention. And then, what they did was, six years later, they brought these patients back. They had gained back 70% of their weight over six years, but they lost 39% of their weight in 30 weeks. So they lost a lot more weight than gastric bypass in that period of time.

And guess what? Their metabolism was still 500 calories a day slower. than expected. So regaining the weight did not cause their metabolism to speed back up to the predicted level again. Having gone through extremely successful, and extremely exercise mediated weight loss, still resulted in significant slowing down of their metabolism. That is why it's so hard to keep it off.

That's why we need to give them these strict criteria of saying, "You need to exercise this much. You need to keep eating less than 1,500 calories a day to keep the weight off." We've not been giving our patients the magnitude of targets, because we just kind of think the weight will stay off. It will not. Your body will gain it back unless you do everything in your power, including possibly taking the medications for weight maintenance to keep it off.