Weight gain and weight management concerns for patients on beta-blockers

Linda S. Lamont, Ph.D.
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β-blocking medications are first-line therapy for young patients with uncomplicated hypertension. They are also prescribed to 55% to 80% of those discharged from the hospital with a diagnosis of myocardial infarction. These drugs are known to decrease cardiovascular morbidity and mortality, but they also have metabolic adverse effects. One that is not widely known is that these drugs cause a decrease in resting metabolic rate, and taking these medications may result in a small weight gain. With continued use, there is an additional difficulty with weight loss, should that be a goal in managing high blood pressure. This article reviews the available research and offers a pragmatic approach to this clinical issue. Nutr Today. 2010;45(6):250–252

Obesity is considered an epidemic in this country, and it has been given a high priority for both preventive and therapeutic interventions. Over the past few decades, there has been an increased prevalence of obesity, despite the heightened interest in dieting for weight loss and weight maintenance. Increased body weight and obesity are clinical problems for many hypertensive patients, and there are clinical and epidemiological evidence that it represents an independent risk factor for coronary artery disease. Patients with hypertension have been prescribed β-blocking medications for decades because they are a safe, first-line treatment. The Table lists the most common β-blocking medications in use today as well as some metabolic adverse effects. In addition to their lowering of blood pressure, these drugs reduce cardiovascular morbidity and mortality and hence are prescribed for a wide variety of cardiovascular conditions. Although commonly used, one of the least appreciated facts about these medications is that they decrease resting metabolic rate. Resting metabolic rate accounts for the largest portion of calories expended each day (60%–75% of energy needs). It is regulated through the activity of the β-adrenoreceptors of the sympathetic nervous system, and it can be influenced by body size, sex, and catecholamine stimulation. Resting metabolic rate is the predominant way for humans to expend calories, and therefore, any reduction in it, however small, can impact body weight over time. One week of using this medication was found to reduce resting metabolic rate in 2 separate groups of healthy young adults by 195 and 326 cal/d. When patients were matched for sex, age, and percent body fat, and their resting metabolic rates were compared, there was a difference of 276 cal/d between the group that was administered a β-blocker and the group that was not. But no drug effect was found for other variables that influence energy balance such as physical activity and food intake. The extent to which this reduction in daily caloric expenditure alters body weight was outlined in a large, systematic review of the available randomized control trials that lasted longer than 6 months. These clinical trials included 7048 patients (3205 receiving β-blockers for 6 months to 10 years), and the median increase in body weight for the medicated patients was 1.2 kg (the largest was 3.5 kg). In addition, the weight gain occurred within the first few months of initiating therapy, and knowing this time course allows the clinician to provide nutritional support to the patient during this period. After the first 6 months, this initial weight gain appears to level off and to be maintained over time.

Clinical Significance
Although this initial weight gain is small, the medication has also been found to impact weight management...
Any medication that promotes weight gain or makes it difficult to lose weight is of interest to medical and allied health professionals who work with these patients; unfortunately, there are no standards of care or clinical management procedures available that offer specific nutritional or exercise recommendations. To date, the World Health Organization—International Society of Hypertension and the Joint National Committee on Prevention, Detection, and Treatment of High Blood Pressure have not made specific lifestyle recommendations for the obese, hypertensive patient who was administered a β-blocker.9

During nutritional and exercise counseling, it is important to be aware that there are metabolic adverse effects of β-blocking medications and that they may make weight loss more challenging for these clients. Some physicians have recommended that a medication change be instituted for some hypertensive patients (particularly those who are obese); their recommendation is a medication shift from β-blocking drugs to angiotensin-converting enzyme inhibitors and diuretics.9 Until specific clinical recommendations are outlined, it is important to counsel patients that both hypertension and cardiovascular disease risk are improved with physical activity and even a modest weight loss. Therefore, patients prescribed β-blocking medications are likely to have multiple benefits from lifestyle changes such as increasing physical activity and decreasing caloric consumption.

**Table. Common β-Blocking Medications in Use Today**

<table>
<thead>
<tr>
<th>Generic Name</th>
<th>Brand Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acebutolol</td>
<td>Sectral</td>
</tr>
<tr>
<td>Atenolol</td>
<td>Tenormin</td>
</tr>
<tr>
<td>Bisoprolol</td>
<td>Zebeta</td>
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<tr>
<td>Metoprolol</td>
<td>Lopressor</td>
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<tr>
<td>Timolol</td>
<td>Blocardren</td>
</tr>
<tr>
<td>Nebivolol</td>
<td>Bystolic</td>
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</tbody>
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*Metabolic effects include an adverse effect on the lipid profile and lipolysis, insulin sensitivity, the facultative thermogenic component in skeletal and nonmuscle tissue, resting metabolic rate, and the thermogenic response to food.9–13 Source: www.medicinenet.com/.

**REFERENCES**


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