

Consumer Reports BEST BUY DRUGS™

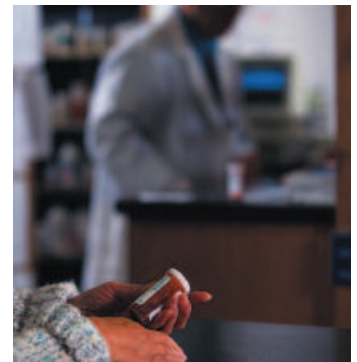
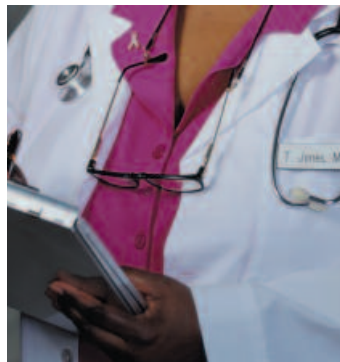
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Treating High Blood Pressure and Heart Disease:

The Beta-Blockers

Comparing Effectiveness, Safety, and Price



Our Recommendations

Costs for beta-blockers – used by tens of millions of Americans to treat high blood pressure and other heart ailments – vary from about \$10 to more than \$250 a month.

This report gives you information that could save you \$1,000 to \$2,000 a year if you are currently taking a brand-name beta-blocker instead of a generic, or hundreds of dollars a year if you are taking a higher cost generic.

Beta-blockers are effective, life-saving medicines with more than 25 years of widespread and generally safe use. This report compares the effectiveness, safety, and cost of 14 beta-blockers in the treatment of high blood pressure, angina, heart attack and heart failure.

Taking effectiveness, safety, and cost into account, we have selected the following seven beta-blockers, at all appropriate doses, as *Consumer Reports Best Buy Drugs*:

- *For high blood pressure* – metoprolol tartrate, nadolol, and propranolol
- *For angina* – atenolol, metoprolol tartrate, nadolol, and propranolol
- *After a heart attack* – atenolol, metoprolol tartrate, and propranolol
- *For mild or moderate heart failure* – bisoprolol and metoprolol succinate (Toprol XL)
- *For severe heart failure* – carvedilol (Coreg)

All but two of these medicines are low-cost generics. All have been proven to be either just as effective or *superior* to other beta-blockers.

All beta-blockers are effective against high blood pressure. But because people with high blood pressure may respond to the various beta-blockers differently, you may have to try more than one before finding the drug that works best for you. Beta-blockers are considered “second step” treatment – after diuretics (widely known as water pills) – if you only have high blood pressure and no other heart condition. They are best used in combination with other blood pressure medicines in the treatment of high blood pressure.

Welcome

This report on a class of drugs called beta-blockers is part of a Consumers Union and *Consumer Reports* project to help you find safe, effective medicines that give you the most value for your health care dollar. To learn more about the project and other drugs we've evaluated, go to www.CRBestBuyDrugs.org.

Beta-blockers are used by tens of millions of Americans everyday. In 2004 they were the fifth most widely prescribed class of medicine. They are used primarily to treat people with high blood pressure. But they are also used to treat other heart conditions. These include angina (heart or chest pain), abnormal heart rhythms, coronary artery blockages, and heart failure. They are also used, along with other treatments, to help prevent repeat heart attacks in people who have already had one, to prevent migraine headaches, and to treat performance or stage-fright anxiety.

Fourteen beta-blockers are currently available. All but two – carvedilol (Coreg) and metoprolol succinate (Toprol XL) – are now available as generic drugs. These two drugs are chemically distinct from other beta-blockers, too. Some beta-blockers are very inexpensive, costing about \$10 to \$15 a month. (See Table 3 on pages 10-13). Metoprolol succinate (Toprol XL) is priced competitively with generics. The 14 drugs are:

Generic Name	Brand Name(s)
Acebutolol	Sectral
Atenolol	Tenormin
Betaxolol	Kerlone
Bisoprolol	Zebeta
Carvedilol	Coreg
Labetalol	Normodyne, Trandate
Metoprolol succinate long acting	Toprol XL
Metoprolol tartrate	Lopressor
Nadolol	Corgard
Penbutolol	Levatol
Pindolol	Visken
Propranolol	Inderal
Propranolol long-acting	Betachron, Inderal-LA, Innopran XL
Timolol	Blocadren

Beta-blockers are just one class of prescription medicine used to treat high blood pressure and heart disease. Four other classes are commonly used to treat high blood pressure, for example. These include the diuretics, calcium channel blockers, ACE inhibitors, and angiotensin-receptor blockers. These four plus beta blockers are often used in combination, two or more at a time. Indeed, many people with high blood pressure will require two or more high blood pressure medicines to bring their blood pressure down to a normal, healthy range.

Talk with your doctor about the right blood pressure and heart medicines, treatments, and lifestyle changes for you – including exercise, weight loss, quitting smoking, and dietary changes. These lifestyle changes are an important part of treatment and can reduce the need for drugs.

High blood pressure is one of the most significantly and persistently under-diagnosed and under-treated medical conditions in the U.S. It raises your risk of heart disease, heart attack, heart failure, stroke, dementia, vision loss, and kidney failure. In most who have high blood pressure, it is a life-long condition. Estimates vary, but at least 65 million Americans – including a third of adults aged 18 and over – have high blood pressure. Yet studies show that:

- 30% are unaware of their condition and not getting any treatment;
- 15% are aware of their condition but not getting treatment or taking medicine;
- 25% are getting treatment but their high blood pressure is *not* under control.

Note to Readers: This is the first of three sequential reports on prescription medicines to treat high blood pressure and heart conditions. Next month's report will focus on ACE Inhibitors. The report following that, in May, will compare drugs in a class called Calcium Channel Blockers. In addition, we will post a separate report to help you make sense of all the types of drugs used – often in combination – to treat high blood pressure. Sign up for an e-mail alert at www.CRBESTBUYDRUGS.org if you'd like us to tell you when these reports are posted.

That leaves only 30% of people with high blood pressure getting the medicines, care, and blood pressure control they need. Uncontrolled high blood pressure is a leading cause of death. Because it has no symptoms and often goes undetected, high blood pressure is often called the nation's leading "silent killer."

High blood pressure's dangers are now thought to extend to an additional *45 to 60 million* Americans who have "prehypertension," or borderline high blood pressure. (See Table 1 on page 7.)

The upshot: You should have your blood pressure measured frequently – at least once a year and more often if you are over age 50, and *every time* you visit a doctor. It only takes a few minutes. High blood pressure can occur at any age but is far more common in people aged 35 and over. It is particularly prevalent in African-Americans, those with a family history of high blood pressure, people who are overweight or obese, people with diabetes, and heavy drinkers. Women taking birth control pills are also at high risk, as are people who take nonsteroidal anti-inflammatory drugs (such as ibuprofen, naproxen, and Celebrex) over long periods.

This report is based on a comprehensive expert analysis of the medical evidence. There's more information on page 17 and at www.CRBESTBUYDRUGS.org about how we conducted our evaluation.

This report was released and last updated in March 2005.



What Are Beta-Blockers and Who Needs Them?

Beta-blockers work by blocking adrenaline in the heart and blood vessels. Adrenaline speeds up the heart rate, makes the heart muscle contract more strongly, and constricts arteries throughout the body. All these raise blood pressure. In blocking adrenaline, beta-blockers slow down the heart and reduce its workload. That helps to decrease blood pressure.

Blood pressure is the force in the arteries when blood is pushed out from the heart. It's measured in millimeters of mercury (abbreviated as mm Hg), and the measurement consists of two numbers. One number, usually given first, is the pressure when the heart beats; that's called the systolic pressure. The second number is the pressure when the heart is at rest. That's called the diastolic pressure. Both matter. Your doctor may say or present them, for example, as "120 over 80" or 120/80 mm Hg.

High blood pressure – the causes of which are not well understood – is defined, for adults, as a systolic pressure of 140mm Hg or greater and/or a diastolic pressure of 90mm Hg or greater. Normal blood pressure is defined as a systolic reading of less than 120mm Hg and a diastolic reading of less than 80mm Hg.

That leaves a gap between normal and high. That gap is now labeled "prehypertensive." Based on recent studies, if your blood pressure readings fall in that gap, you are at risk of developing high blood pressure and already have some elevated risk of heart disease and stroke. You need to get your blood pressure down. Table 1 on page 7 presents these levels of blood pressure and general treatment guidance. If your blood pressure levels are prehypertensive and you have heart or kidney disease or diabetes, you may need drug treatment to lower your blood pressure.

Note: Both numbers – systolic and diastolic – don't have to be high at the same time, and often are not. Even if one is elevated, you are considered to have high blood pressure. Indeed, in people aged 50 and over, a high systolic reading appears to be much more strongly linked to a higher risk of heart disease and heart attack than a high diastolic blood pressure.

High blood pressure's relationship to stress, nervousness, or feeling "tense" is often misunderstood. Feeling excited, anxious, fearful, or stressed can indeed raise blood pressure, but usually only temporarily – due to the surge of adrenaline that often accompanies these feelings. That's why beta-blockers are sometimes prescribed to people who get anxious before performances or public speaking. They block the adrenaline rush that causes a racing heart, sweating, dizziness, and feelings of mental disorientation.

But those are not symptoms of high blood pressure and using beta-blockers to reduce the physical symptoms of anxiety is not a treatment for high blood pressure. You can be a calm, relaxed person who never gets fearful and still have high blood pressure. And you will have no symptoms. The only way to detect your high blood pressure is to have it checked using a blood pressure arm cuff.

Beta-blockers are not the first choice for treating most people with high blood pressure. Recent studies indicate that inexpensive generic diuretics (such as hydrochlorothiazide or chlorthalidone) are a better initial choice. Indeed, diuretics are proven to prevent strokes and death more effectively than beta-blockers. People who are already taking a diuretic, however, and need a second drug to get their blood pressure down often benefit from a beta-blocker.

Beta-blockers *are the first choice*, however, for people who have high blood pressure *and* one or more of the following conditions:

- Angina (chest pain due to coronary artery disease)
- A high heart rate even at rest (a condition called tachycardia)
- A previous heart attack
- Heart failure (when the heart muscle weakens)
- Certain abnormal heart rhythms (arrhythmias, atrial fibrillation)
- Migraine headaches

- Glaucoma or gout (both of which can be aggravated by diuretics).

If you are taking a beta-blocker for high blood pressure and you do not have heart disease or one of these conditions, talk to your doctor about whether a diuretic would be a better choice.

Finally, if you have asthma or chronic obstructive pulmonary disease (COPD), you should be taking a beta-blocker with extreme caution and under a doctor's watchful eye. The drugs can exacerbate these conditions. However, the benefit of a beta-blocker after a heart attack is so great that the advantage probably outweighs the risk in people who have *mild* asthma or COPD.

People who have peripheral vascular disease, diabetes, hyperthyroidism, or kidney disease also should take beta-blockers with extreme caution.



Table 1. Blood Pressure Levels and Treatment Guidance

Blood Pressure Classification	Systolic Measure (mm Hg)	Diastolic Measure (mm Hg)	General Treatment Guidance
Normal	Below 120	Below 80	<ul style="list-style-type: none"> ■ No treatment needed ■ Healthy lifestyle encouraged to maintain normal blood pressure
Prehypertensive	120-139	80-89	<ul style="list-style-type: none"> ■ Lifestyle changes needed: weight loss, quitting smoking, low-salt and low-fat diet, moderate alcohol use, and increased exercise ■ Drug treatment not indicated except if you have diabetes, kidney or heart disease
Stage 1 High Blood Pressure	140-159	90-99	<ul style="list-style-type: none"> ■ Lifestyle changes urged, same as above ■ Drug treatment needed. Doctor may start with one medicine to see if it does the job.
Stage 2 High Blood Pressure	160 or above	100 or above	<ul style="list-style-type: none"> ■ Lifestyle changes urged, same as above ■ Drug treatment needed. Two or more medicines usually required to bring blood pressure down.

Source: Chobanian AV, Bakris GL, Black HR, et al., "The seventh report of the Joint National Committee on prevention, detection, evaluation and treatment of high blood pressure," *Journal of the American Medical Association*, 2003; 289(19):2560-2572

Choosing a Beta-Blocker — Our *Best Buy* Picks

Choosing a beta-blocker, and its dose, depends on what you need it for. Studies show that some beta-blockers are more effective and safer than others for certain conditions. If you have two or more of the conditions we discuss below, or others, your doctor will be making a judgment call about which beta-blocker and dose is best for you.

The information in this report will help you talk with your doctor about which drug and dose is best and safest depending on your health status, and which may also cost you the least money out of pocket.

People respond to the various beta-blockers differently. So, you may have to try more than one if your doctor judges that the one you initially took is not working well. In addition, beta-blockers have some annoying side effects — such as fatigue and drowsiness. And they can also cause, less commonly, lowered sex drive, erectile dysfunction, disturbing dreams, and mild depression. In some studies, 10% to 20% of people trying a beta-blocker for the first time had to stop taking it because they could not tolerate the side effects.

For that reason you should talk with your doctor about starting with a *low dose* of a beta-blocker. It is common for initial therapy to be at the lowest dose possible. But while there are generally accepted guidelines on beta-blocker dosing, many doctors have their own ideas about the best dose to start with in different groups of patients.

Higher doses raise the risk of side effects. But they also may be more effective. So, if you need to take a beta-blocker — especially for years — it may be a balancing act to find the dose that works best but also has the fewest side effects. And that dose may change over time.

Taking effectiveness, safety, and cost into account, we have selected the following beta-blockers, at all listed doses, as *Consumer Reports Best Buy Drugs*:

- *For high blood pressure* — metoprolol tartrate, nadolol, and propranolol

- *For angina* — atenolol, metoprolol tartrate, nadolol, and propranolol

- *After a heart attack* — atenolol, metoprolol tartrate, and propranolol

- *For mild or moderate heart failure* — bisoprolol and metoprolol succinate (Toprol XL)

- *For severe heart failure* — carvedilol (Coreg)

All but two of these medicines are low-cost generics. (See Table 3.) All have been proven to be either just as effective *or superior* to other beta blockers. Metoprolol succinate (Toprol XL) is a relatively low cost brand drug. Carvedilol (Coreg) is a more expensive, recently approved brand-name beta-blocker. It is not yet available as a generic.

Treating high blood pressure. All 14 beta-blockers are effective in lowering blood pressure in people who only have high blood pressure and no other form of heart disease. All 14 are approved to treat high blood pressure by the FDA. No beta-blocker has been shown more effective at lowering blood pressure than any other when used as either solo treatment or in combination with other blood pressure medicines.

All the beta-blockers are strongly *presumed* to reduce your risk of coronary heart disease, heart attack, and stroke if you have high blood pressure. But, unfortunately, studies have not clearly proven that beta-blockers reduce the risk of a first heart attack or premature death in people who have high blood pressure but no other form of heart disease. Nor have they shown any one beta-blocker to be better than any other in reducing the risk of heart attack, stroke or premature death.

Thus, if you have high blood pressure but no other heart condition, any beta-blocker may help, probably in combination with another type of high blood pressure drug (most likely a diuretic).

Our choice of three *Best Buy* beta-blockers for high blood pressure — metoprolol tartrate, nadolol, and

Table 2. Proven Effectiveness of Beta-Blockers Against Specific Heart Conditions

Generic Name	Brand Name(s)	Treating Angina	After a Heart Attack	Treating Heart Failure
Acebutolol	Sectral	Yes		
Atenolol	Tenormin	Yes	Yes	
Betaxolol	Kerlone			
Bisoprolol	Zebeta			Yes
Carvedilol	Coreg		Yes	Yes
Labetalol	Normodyne, Trandate			
Metoprolol succinate	Toprol XL			Yes
Metoprolol tartrate	Lopressor	Yes	Yes	
Nadolol	Corgard	Yes		
Penbutolol	Levatol			
Pindolol	Visken			
Propranolol	Inderal	Yes	Yes	
Timolol	Blocadren		Yes	

propranolol – is based primarily on cost. All are relatively low-cost generics. Since the beta-blockers are not proven to be any different in effectiveness, there is no reason not to take the least expensive beta-blocker when you are taking one to reduce blood pressure. (Note: Atenolol, a low-cost generic, is not among our *Best Buys*. A study published last year cast doubts on its use in treating people who have high blood pressure but no other heart disease.)

Treating Angina. Four beta-blockers – atenolol, metoprolol tartrate, nadolol, and propranolol – are approved by the FDA to treat angina, the chest pain that occurs in people with coronary artery disease. Acebutolol is also commonly used to treat angina. All are effective in reducing symptoms and enhanc-

ing tolerance to exercise and exertion, such as walking long distances and climbing stairs. They are also being prescribed in people with angina to help prevent a heart attack.

There are no differences among these five beta-blockers in reducing angina symptoms. And studies conducted to date were generally too small to determine whether there are important differences among the drugs in the long run.

Two beta-blockers we mention in this report should *not* be used to treat angina: penbutolol and pindolol. These medicines reduce heart rate less than other beta-blockers, a distinct disadvantage in treating angina.

We have chosen four of the five indicated beta-blockers as *Best Buy* drugs for people with angina, based on price. They are **atenolol**, **metoprolol tartrate**, **nadolol**, and **propranolol**. Generic acebutolol is substantially more expensive than these four and no more effective.

After a heart attack. Taking a beta-blocker after a heart attack lowers the risk of a repeat attack and death by 15% to 25%. It has become a standard of care for most heart attack victims. Five beta-blockers – atenolol, carvedilol (Coreg), metoprolol tartrate, propranolol, and timolol – have been proven in studies to reduce deaths in people who’ve had heart attacks.

The evidence is somewhat stronger for **atenolol**, **metoprolol tartrate**, and **propranolol**, however. On that basis, and because they are available at lower cost than carvedilol (Coreg) and timolol, we have chosen these three as *Best Buy* beta-blockers for people who have had a heart attack. Studies of carvedilol are complicated by its use alongside another type of heart drug.

Treating heart failure. Three beta-blockers – bisoprolol, metoprolol succinate (Toprol XL), and carvedilol (Coreg) – have been proven to reduce deaths by about 30% and improve quality of life in people who have heart failure. Metoprolol tartrate has been proven to slow the progression of heart failure but had no effect on deaths. For that reason, we do not consider it in the treatment of heart failure.

Heart failure occurs when the heart begins to lose its ability to contract and pump blood efficiently. It is a

chronic disease that afflicts mostly seniors and usually gets worse over time. But it can be managed well with various drugs, including beta-blockers.

Beta-blockers have different effects in people who have heart failure. Because people with heart failure are at high risk of complications, treatment with a beta-blocker must be monitored carefully by a doctor, usually a cardiologist. Your medical condition and circumstances, and your doctor’s experience with particular beta-blockers will likely be an important factor in his or her choice among these four drugs.

Carvedilol (Coreg) and metoprolol succinate (Toprol XL) are approved by the FDA and have been heavily marketed for treating heart failure. Bisoprolol is effective but is not yet approved by the FDA for treating heart failure. Cardiologists are beginning to use it more for this purpose. Carvedilol (Coreg) and metoprolol succinate (Toprol XL) are not available as generics and cost more than bisoprolol.

Taking effectiveness, safety, and cost into account, for most people with mild to moderate heart failure, both **bisoprolol** and **metoprolol succinate (Toprol XL)** are proven and cost-effective choices, and we have selected them as *Best Buy* drugs for such patients.

Stronger evidence shows **carvedilol (Coreg)** to be effective in treating people with severe heart failure. On that basis, we have chosen it as our *Best Buy* drug for such patients, despite its substantially higher cost.

Table 3. Beta-Blocker Cost Comparison and *Best Buy* Indication

Generic Name and Dose	Brand Name ¹	Frequency of Use	Average Monthly Cost ²	Best Buy Indication
Acebutolol 200mg	Sectral	Two a day	\$174	
Acebutolol 200mg	Generic	Two a day	\$43	
Acebutolol 400mg	Sectral	Two a day	\$255	
Acebutolol 400mg	Generic	Two a day	\$55	

Table 3. Beta-Blocker Cost Comparison and *Best Buy* Indication (continued)









	Generic Name and Dose	Brand Name ¹	Frequency of Use	Average Monthly Cost ²	Best Buy Indication
	Atenolol 25mg	Tenormin	One a day	\$47	
	Atenolol 25mg	Generic	One a day	\$10	Angina, Heart Attack
	Atenolol 50mg	Tenormin	One a day	\$47	
	Atenolol 50mg	Generic	One a day	\$10	Angina, Heart Attack
	Atenolol 100mg	Tenormin	One a day	\$71	
	Atenolol 100mg	Generic	One a day	\$13	Angina, Heart Attack
	Betaxolol 10mg	Kerlone	One a day	\$41	
	Betaxolol 10mg	Generic	One a day	\$30	
	Betaxolol 20mg	Kerlone	One a day	\$61	
	Betaxolol 20mg	Generic	One a day	\$42	
	Bisoprolol 5mg	Zebeta	One a day	\$56	
	Bisoprolol 5mg	Generic	One a day	\$37	Mild to Moderate Heart Failure
	Bisoprolol 10mg	Zebeta	One a day	\$55	
	Bisoprolol 10mg	Generic	One a day	\$38	Mild to Moderate Heart Failure
	Carvedilol 6.25mg	Coreg	Two a day	\$124	Severe Heart Failure
	Carvedilol 12.5mg	Coreg	Two a day	\$124	Severe Heart Failure
	Carvedilol 25mg	Coreg	Two a day	\$122	Severe Heart Failure
	Labetalol 100mg	Normodyne	Two a day	\$38	
	Labetalol 100mg	Trandate	Two a day	\$49	
	Labetalol 100mg	Generic	Two a day	\$26	
	Labetalol 200mg	Normodyne	Two a day	\$79	
	Labetalol 100mg	Trandate	Two a day	\$66	
	Labetalol 200mg	Generic	Two a day	\$33	
	Labetalol 300mg	Normodyne	Two a day	\$80	
	Labetalol 300mg	Generic	Two a day	\$44	

Table 3. Beta-Blocker Cost Comparison and Best Buy Indication (continued)










	Generic Name and Dose	Brand Name ¹	Frequency of Use	Average Monthly Cost ²	Best Buy Indication
	Metoprolol tartrate 50mg	Lopressor	One a day	\$35	
	Metoprolol tartrate 25mg or 50mg	Generic	One a day ³	\$9	High Blood Pressure, Angina, Heart Attack
	Metoprolol tartrate 100mg	Lopressor	One a day	\$52	
	Metoprolol tartrate 100mg	Generic	One a day ³	\$12	High Blood Pressure, Angina, Heart Attack
	Metoprolol succinate (sustained release) 25mg or 50mg	Toprol XL	One a day	\$32	Mild to Moderate Heart Failure
	Metoprolol succinate (sustained release) 100mg	Toprol XL	One a day	\$44	Mild to Moderate Heart Failure
	Metoprolol succinate (sustained release) 200mg	Toprol XL	One a day	\$69	Mild to Moderate Heart Failure
	Nadolol 20mg	Corgard	One a day	\$59	
	Nadolol 20mg	Generic	One a day	\$18	High Blood Pressure, Angina
	Nadolol 40mg	Corgard	One a day	\$66	
	Nadolol 40mg	Generic	One a day	\$19	High Blood Pressure, Angina
	Nadolol 80mg	Corgard	One a day	\$90	
	Nadolol 80mg	Generic	One a day	\$25	High Blood Pressure, Angina
	Penbutolol 20mg	Levatol	One a day	\$61	
	Pindolol 5mg	Visken	Two a day	\$86	
	Pindolol 5mg	Generic	Two a day	\$32	
	Pindolol 10mg	Visken	Two a day	\$94	
	Pindolol 10mg	Generic	Two a day	\$43	
	Propranolol 10mg	Inderal	Two a day	\$33	
	Propranolol 10mg	Generic	Two a day	\$12	High Blood Pressure, Angina, Heart Attack

Table 3. Beta-Blocker Cost Comparison and Best Buy Indication (continued)

Generic Name and Dose	Brand Name ¹	Frequency of Use	Average Monthly Cost ²	Best Buy Indication
Propranolol 20mg	Inderal	Two a day	\$44	
 Propranolol 20mg	Generic	Two a day	\$13	High Blood Pressure, Angina, Heart Attack
Propranolol 40mg	Inderal	Two a day	\$56	
 Propranolol 40mg	Generic	Two a day	\$15	High Blood Pressure, Angina, Heart Attack
Propranolol 60mg	Inderal	Two a day	\$79	
 Propranolol 60mg	Generic	Two a day	\$22	High Blood Pressure, Angina, Heart Attack
Propranolol 80mg	Inderal	Two a day	\$87	
 Propranolol 80mg	Generic	Two a day	\$20	High Blood Pressure, Angina, Heart Attack
Propranolol (sustained release) 80mg	Inderal-LA	One a day	\$52	
Propranolol (sustained release) 80mg	Generic	One a day	\$36	
Propranolol (sustained release) 120mg	Inderal-LA	One a day	\$64	
Propranolol (sustained release) 120mg	Generic	One a day	\$40	
Timolol 10mg	Blocadren	Two a day	\$69	
Timolol 10mg	Generic	Two a day	\$25	
Timolol 20mg	Blocadren	Two a day	\$72	
Timolol 20mg	Generic	Two a day	\$45	

- (1) "Generic" indicates that this drug is sold by its generic name. For example, in this table, for the first drug listed, acebutolol is the generic or chemical name and Sectral is the brand name. Both are available and they have the very same active ingredient. In column 2, when the word "generic" appears, the price given is for the generic version. Note that the generic almost always cost much less than the brand-name version.
- (2) Prices reflect nationwide retail average for December 2004, rounded to the nearest dollar; data provided by NDC Health, a health care information company.
- (3) Two a day dosing of this drug is common for people with angina or who have had a heart attack.

The Evidence

This section presents more detailed information on the effectiveness and safety of beta-blockers.

This report is based on an analysis of the scientific evidence on beta-blockers. More than 5,000 studies were identified that were published in the peer-reviewed medical literature between the mid-1960s and early 2004. From these, the analysis focused on 104 studies, most of which were medium- to large-scale controlled clinical trials or detailed “meta-analyses” of multiple clinical trials. A meta-analysis study combines the results of previous individual studies and tries to draw conclusions based on all of them.

How Effective Are Beta-Blockers?

Beta-blockers are potent, highly effective medicines. Studies show them consistently better than placebo in treating high blood pressure and a range of other heart conditions.

There are important differences in how the various beta-blockers work that will affect your doctor’s use of them. These differences have affected our choice of *Best Buy* drugs as well – for the different conditions specified.

In effect, there are four subgroups among the 14 beta-blockers. One group, called the nonselective beta-blockers, equally reduce adrenaline’s impact on the heart muscle and on blood vessels, the lungs, the bladder, and the eyes. A second group, called the “cardioselective” beta-blockers, block adrenaline’s impact on the heart more than tissues in the rest of the body. A third group has less impact on the heart itself and more on blood vessels and other tissues. And a fourth group works by affecting other nerve signals entirely, primarily in blood vessels.

For example, the six cardioselective beta-blockers are acebutolol, atenolol, betaxolol, bisoprolol, metoprolol tartrate, and metoprolol succinate.

Your doctor should know about these differences. And you should not hesitate to ask your doctor what kind of beta-blocker is being prescribed – and how your

doctor thinks it will act in your body. This may help you understand why you need to continue taking the medicine even though it won’t necessarily make you feel better – and could even make you feel worse.

Overall, the strongest evidence on beta-blockers links them to a lower risk of repeat heart attack and early death in the aftermath of a heart attack. More than 60 studies have examined this, and all have found a marked benefit for the pills. Almost everyone who has had a heart attack should be taking a beta-blocker.

There is also compelling evidence that some beta-blockers lower the risk of death in people with heart failure, preventing 3.8 deaths per 100 patients in the first year of treatment.

Against high blood pressure, beta-blockers are considered to be a critical “second step” or additional drug – with strong evidence of effectiveness when used in combination with other blood pressure drugs, most notably diuretics. In one landmark analysis published in 2003, beta-blockers given to people with high blood pressure were better than placebo in preventing stroke and cardiovascular disease events, including death. But, when used alone, they were inferior to low-dose diuretics in reducing the risk of these outcomes.

How Safe Are Beta-Blockers?

Beta-blockers are generally safe medicines, with more than 20 years of widespread use around the world. They have not been shown to cause any serious long-term or irreversible negative consequences, even after many years of use.

But side effects are common among people taking beta-blockers. The majority of people can expect to experience at least one. These include fatigue or drowsiness, dizziness or lightheadedness, slow heart-beat, low blood pressure, difficulty breathing, numbness, tinkling or coldness of fingers, toes or skin, weight gain, mental depression, disturbing dreams, reduced libido, erectile dysfunction in men, or ability to reach orgasm in both men and women.

Any of these should prompt a call to your doctor if it persists, especially breathing difficulties, dizziness, or fatigue. Many of these side effects are related to the dose you take – with the risk of side effects rising as the dose increases. Your doctor may need to reduce your beta-blocker dose to see if that solves the problem. Most side effects can be avoided or minimized by starting with a low dose and increasing it gradually if that is necessary. Also, some of these adverse effects go away or diminish in time, after your body gets used to the drug.

If one or more side effects persist with one beta-blocker, your doctor will likely suggest you try another one. There is no evidence that any one beta-blocker produces more or less side effects than any other, but people respond differently to the individual drugs.

Some people, however, have to stop taking any beta-blocker because they cannot tolerate the side effects. In one study of heart failure patients, one in five could not tolerate the first beta-blocker they were given. About half of that group was successfully switched to another beta-blocker. In other studies the rate at which people had to stop taking a beta-blocker due to side effects was somewhat lower.

When used to treat high blood pressure, beta-blocker side effects can be a problem because the condition has no symptoms but the drug produces some. People have widely varying tolerance for side effects and you should talk to your doctor about their importance to you.

In particular, the mild mental depression or loss of sexual appetite that can occur with beta-blockers is quite unacceptable to some people but tolerable to others.

You should not stop taking a beta-blocker without consulting your doctor. This can be quite dangerous, worsen your condition, or put you at risk of a heart attack or heart failure.

Age, Race, and Gender Differences

Beta-blockers in general may be less effective in controlling high blood pressure in African-Americans. But no particular beta-blocker has been shown to be more effective or safer than any other in African-Americans or any other ethnic group. Likewise, no beta-blocker has been shown to be more or less useful in men than in women or in any particular age group.



Talking with Your Doctor

It's important for you to know that the information we present here is not meant to substitute for a doctor's judgment. But we hope it will help your doctor and you arrive at a decision about which beta-blocker and dose is best for you, and which gives you the most value for your health care dollar.

Bear in mind that many people are reluctant to discuss the cost of medicines with their doctor and that studies show doctors do not routinely take price into account when prescribing medicines. Unless you bring it up, your doctors may assume that cost is *not* a factor for you.

Many people (including physicians) believe that newer drugs are better. While that's a natural assumption to make, it's not true. Studies consistently show that many older medicines are as good as, and in some cases better than, newer medicines. Think of them as "tried and true," particularly when it comes to their safety record. Newer drugs have not yet met the test of time, and unexpected problems can and do crop up once they hit the market.

Of course, some newer prescription drugs are indeed more effective and safer. Talk with your doctor about the pluses and minuses of newer versus older medicines, including generic drugs.

Prescription medicines go "generic" when a company's patents on a drug lapse, usually after about 12 to 15 years. At that point, other companies can make and sell the drug.

Generics are much less expensive than newer brand-name medicines, but they are *not* lesser quality drugs. Indeed, most generics remain useful medicines even many years after first being marketed. That is why today about 47% of all prescriptions in the U.S. are for generics.

Another important issue to talk with your doctor about is keeping a record of the drugs you are taking. There are several reasons for this:

- First, if you see several doctors, each may not be aware of medicines the others have prescribed.
- Second, since people differ in their response to medications, it is very common for doctors today to prescribe several medicines before finding one that works well or best.
- Third, many people take several prescription medications, nonprescription drugs, and dietary supplements at the same time. These can interact in ways that can either reduce the benefit you get from the drug, or be dangerous.
- And fourth, the names of prescription drugs – both generic and brand – are often hard to pronounce and remember.

For all these reasons, it's important to keep a *written list* of all the drugs and supplements you are taking and to periodically review this list with your doctors.

Always be sure, too, that you understand the dose of the medicine being prescribed for you and how many pills you are expected to take each day. Your doctor should tell you this information. When you fill a prescription at the pharmacy or if you get it by mail, you may want to check to see that the dose and the number of pills per day on the pill bottle match the amounts that your doctor told you.

How We Picked the *Best Buy* Beta-Blockers

Our evaluation is based on an independent scientific review of the evidence on the effectiveness, safety, and adverse effects of beta-blockers. A team of physicians and researchers at the Oregon Health & Science University Evidence-based Practice Center conducted the analysis as part of the Drug Effectiveness Review Project, or DERP. DERP is a first-of-its-kind 12-state initiative to evaluate the comparative effectiveness and safety of hundreds of prescription drugs.

A synopsis of DERP's analysis of the beta-blockers forms the basis for this report. A consultant to *Consumer Reports Best Buy Drugs* is also a member of the Oregon-based research team, which has no financial interest in any pharmaceutical company or product.

The full DERP review of beta-blockers is available at <http://www.ohsu.edu/drugeffectiveness/reports/final.cfm>. (Warning: it is a long and technical document written for physicians and experts.)

The drug costs we site were obtained from a health-care information company that tracks the sales of

prescription drugs in the U.S. Prices for a drug can vary quite widely, even within a single city or town. All the prices in this report are national averages based on sales of prescription drugs in retail outlets. They reflect the cash price paid for a month's supply of each drug in December 2004.

Consumers Union and *Consumer Reports* selected the *Best Buy Drugs* using the following criteria. The drug (and dose) had to:

- Be in the top tier of effectiveness among the 13 beta-blockers
- Have a safety and side effect record equal to or better than other beta-blockers.
- Have an average price for a 30-day supply that is substantially lower than the most costly beta-blocker meeting the first two criteria

The Consumers Reports Best Buy Drugs methodology is described in more detail in the methods section at www.CRBestBuyDrugs.org.

About Us

Consumers Union, publisher of *Consumer Reports* magazine, is an independent and nonprofit organization whose mission since 1936 has been to provide consumers with unbiased information on goods and services and to create a fair marketplace. Its Web site is www.consumer.org. The magazine's Web site is www.consumerreports.org.

Consumer Reports Best Buy Drugs is a public education project administered by Consumers Union. Two outside sources of generous funding made the project possible. They are a major grant from the Engelberg Foundation, a private philanthropy, and a supporting grant from the National Library of Medicine, part of the National Institutes of Health. A more detailed explanation of the project is available at www.CRBestBuyDrugs.org.

We followed a rigorous editorial process to ensure that the information in this report and on the *Consumer Reports Best Buy Drugs* Web site is accurate and describes generally accepted clinical practices. If we find, or are alerted to, an error, we will correct this as quickly as possible. However, *Consumer Reports* and its authors, editors, publishers, licensors and any suppliers cannot be responsible for medical errors or omissions, or any consequences from the use of the information on this site. Please refer to our user agreement at www.CRBestBuyDrugs.org for further information.

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