Author/Title/ Journal/Year	Type of Study	Outcomes Studied	Patient Characteristics	Results	HCFA Comments
B-Blocker Heart Attack Trial Research Group / A randomized trial of propranolol in patients with acute myocardial infarction / JAMA / 1982	Randomized	The B-Blocker Heart Attack Trial (BHAT) tested if the regular administration of propranolol hydrochloride to patients, who had experienced at least one MI, would experience a reduction in mortality (from all causes) during a 2-4 year period.	Patients were men and women between 30-69 years of age who were hospitalized with an acute MI. Patients with contra-indications to propanolol were excluded from the study. Individuals were randomly assigned to propanolol treatment or a placebo after hospital admission. There was excellent compatibility between the control and treatment groups.	Overall, propranolol reduced mortality by 26%. The treatment was effective for patients who had more than one MI, a single MI with complications (i.e. congestive heart failure) or a single uncomplicated MI.	Patients with contra-indicat such as, mark bradycardia, v excluded from study.
CIBIS-II Investigators and Committees / The cardiac insufficiency bisoprolol study II (CIBIS-II): a randomized trial / The Lancet / 1999	Randomized	This study was designed to test the results of CIBIS I. The efficacy of bisoprolol was studied in order to determine if it decreased all-cause mortality in chronic heart failure.	Patients were 18-80 years and suffered from chronic heart failure. Patients were recruited from 274 hospitals in 18 countries. The main exclusion criteria included hypertension, myocardial infarction or unstable angina pectoris in the previous 3 months AV block greater than first degree without	CIBIS-II was stopped early because bisoprolol showed a significant mortality benefit. All-cause mortality was lower for those treated with bisoprolol (11.8%) compared to the placebo group (17.3%).	The exclusion criteria reflect many of the patients inclu the coverage request. The r age of patient 61. The autho suggests that information is needed conce treatment opt for old and ve patients.

			heart rate of less than 60 beats per minute and systolic blood pressure at rest of less than 100 mm Hg.		
Crockett, Samuel E, Davis, David, Golden, William E, et al. / Quality care alert: beta-blocker prophylaxis after acute myocardial infarction / / 2000	NA	This quality alert says that beta-blockers are underutilized even though they have been proven to decrease mortality.	NA	The benefits of beta-blockers for individuals with certain relative contra-indications may outweigh the disadvantages. These relative contra-indications include: asthma, diabetes mellitus, chronic obstructive pulmonary disease, severe peripheral vascular disease, PR interval greater than 0.24 second, and moderate or severe LV failure.	Patients who high chance o reinfarction, w includes indiv with a history infarction, ber from beta-blo if they are no contraindicate that therapy. following soci participated in development review of this American Association of Endocrinologis American Coll Physicians/An Society of Int Medicine, Am College of Physicians/An Society of Int Medicine, Am Academy of F Physicians, American Psychiatric Association, American Coll Cardiology.
Forsberg, SA, Juul-Moller, S / Myocardial infarction complicated by heart block - treatment and	Case series	The study followed acute MI patients who developed heart block, and the survival rate of these patients	The study population (597) includes all patients diagnosed with acute MI admitted to the Coronary	The patients with heart block had a significantly lower survival than all the patients in the	This article wa found to be pertinent in o analysis.

prognosis / Acta Med Scand / 1979		two years.	hospital in Boras. The age distribution is as follows: 13.2% were less than 55, 25% were between 55-64, 36.7% were between 65-74 and 25.1% were 75 or older. Of the 597 patients, 85 had heart block (complete in 40), at most secong degree in 29, and 16 had first degree block.	population.	
Frishman, William H, Furberg, Curt D, Friedewald, William T / Medical intelligence: B-adrenergic blockade for survivors of acute myocardial infarction / The New England Journal of Medicine / 1984	Review	NA	NA	NA	The authors r that up to 20 MI survivors h absolute or re contra-indicat to beta-blocka The remaining patients may benefit from t therapy.
Geddes, JS / Beta-sympathetic blockade with chronotropic compensation in the management of heart disease / Acta Med Scand (Suppl) / 1982	Case series	The authors investigated the long-term effects of correcting bradycardia by pacing. In addition, a second group was studied in order to determine if beta-blocker treatment	9 patients temporarily paced in order to control pain associated with bradycardia. 27 others were implanted with a pacemaker to provide chronic pain relief. 9/27 or 33% had evidence of sino-atrial disorder.	Beta-blockers, in addition to pacing, are an effective combination for managing arrhythmias. There were two groups of patients studied: one group consisted of 36	In the first gr 27 patients w implanted wit permanent pacemaker. E these patients 30%, relapse experienced s symptoms or

		pacing is beneficial for patients with ventricular arrhythmias.	bradycardia.	individuals who received temporary or permanent pacing. Of these patients, 67% experienced benefit. The second group consisted of 14 patients with arrhythmias, of which 10 patients experienced positive outcomes.	
Gottlieb, Stephen S, McCarter, Robert J, Vogel, Robert A / Effect of beta-blockade on mortality among high-risk and low-risk patients after myocardial infarction / The New England Journal of Medicine / 1998	Retrospective cohort	The researchers used data from the Cooperative Cardiovascular Project to determine which patients benefit from beta-blocker treatment. Patients with contra-indications to beta-blocker use were also studied. These contra-indications include: older age, low ejection fraction, chronic obstructive pulmonary disease, diabetes mellitus, low blood pressure, and low heart rate.	Patients who received beta-blockers had fewer risk factors for mortality than those who did not receive beta-blockers. For example, They were younger, had shorter hospital stays, were in better physiologic condition, and had fewer coexisting diseases. The following factors were held constant: age, race or ethnic group, sex, APACHE II score, length of hospital stay, Killip score, physiologic condition at admission, etc.	Patients post MI, with no other contra-indications to beta-blockers experienced a 40% reduction in mortality. Mortality was also reduced by 40% in patients with non-Q-wave infarction and those with chronic obstructive pulmonary disease.	It is possible t the patients w received beta blockers were healthier than who did not.

Gregoratos, G, Cheitlin, M, Conill, A, et al / ACC/AHA guidelines for implantation of cardiac pacemakers and antiarrhythmia devices / Journal of the American College of Cardiology / 1998	NA	NA	NA	Class I, Level C Evidence Sinus Node dysfunction with documented symptomatic bradycardia, including frequent sinus pauses that produces symptoms. In some patients, bradycardia is iatrogenic and will occur as a consequence of essential long term drug therapy of a type and dose for which there are no acceptable alternatives.	This is a set o guidelines joi established b American Coll Cardiology an American Hea Association. T guidelines up the 1984 and previously pu guidelines concerning ca pacemakers a antiarrhythmi devices.
Health Care Financing Administration / Acute myocardial infarction national project overview / / 1999	NA	This project seeks to lower the one-year mortality for Medicare beneficiaries post MI. Project objectives include increasing the administration of aspirin, beta-blockers and ace- inhibitors.	NA	Administration of aspirin, beta-blockers, ace inhibitors and smoking cessation improve survival.	No comments made concer the project's i on the asymptomati population.
Hjalmarson, Ake / Effects of beta blockade on sudden cardiac death during acute myocardial infarction and the	Review	This article reviews the literature and reports the impact of beta-blocker therapy in preventing	NA	Pooling the data from 24 long-term beta-blocker studies reveals a 34% reduction in the risk of cardiac	There is little information concerning pa selection for e trial. It is unk if the patients included in th

period / The American Journal of Cardiology / 1997		during acute MI and the post MI.		death.	of the asymptomatic population of patients targe the coverage request.
Krumholz, Harlan M, Radford, Martha J, Wang, Yun MS, et al / National use and effectiveness of [small beta]-blockers for the treatment of elderly patients after acute myocardial infarction: national cooperative cardiovascular project / JAMA: The Journal of the American Medical Association / 1998	Retrospective cohort	This article says that beta-blockers have been demonstrated to be an effective treatment for post MI patients, however they are underutilized in the elderly. This study attempts to describe the contemporary national pattern of beta-blocker usage among patients 65 and older with an AMI who are discharged from the hospital.	Out of 115,015 eligible patients (who were 65 or older, post MI, had survived hospitalization, had no terminal illness, and not transferred), 61% had one or more contra-indications, such as bradycardia, high-grade AV block, heart failure, etc. This left 45,308 patients who were ideal candidates for beta-blocker therapy. The mean age for this group was 75.3 years and 45.7% were women. Fifty percent of the ideal patients received beta-blocker treatment. Thirty-seven percent of the eligible patients received beta-blockers.	There was a great deal of variation by state concerning beta-blocker treatment. The New England region had higher rates of beta-blocker usage than other areas of the country. There was a 14% lower risk of mortality for those on beta-blockers one year after discharge. Elderly patients treated with beta-blockers at hospital discharge had a better survival rate.	Patterns of be blocker use af discharge cou be monitored, therefore the term pattern may be miscla The researche ability to asce contra-indicat to beta-blocke was hindered information in charts. The st sample was hospitalized in and 1995 and may improver in the quality care.
Kusumoto, F, Goldschlager, N / Cardiac pacing / New England Journal of Medicine / 1996	Review	This is a review concerning indications for pacemaker implantation.	NA	There have been many advancements in pacemaker technologies. Care for	This article wa found to be pertinent in o analysis.

				also become more difficult due to the increase in pacing options.	
Lamas, Gervasio A, Orav, E. John, Stambler, Bruce S, et al / Quality of life and clinical outcomes in elderly patients treated with ventricular pacing as compared with dual-chamber pacing / The New England Journal of Medicine / 1998	Randomized	Health-related quality of life was compared to baseline (before implantation) and three months, nine months and 18 months after.	Average age 76 years (range, 65 to 96). 60% of the patients were men. Over 70% of patients were in New York Heart Association class I or II. 29% of the patients had a history of supraventricular tachycardia and 27% had a history of heart failure. There were no significant differences between the two groups. 201 of the patients were implanted due to AV block, 175 patients because of sinus-node dysfunction and 31 were permanently paced due to other diagnoses.	Patients with sinus-node dysfunction experience better outcomes from dual chamber pacing compared to ventricular pacing. Pacemaker implantation improves quality of life.	This article wa found to be pertinent in o analysis. It compared the outcomes of ventricular pa to dual-chaml pacing rather providing any information us in considering asymptomatic bradycardia patients.
McCormick, Danny, Gurwitz, Jerry H, Lessard, Darleen, MS, et al / Use of aspirin, beta-blockers, and lipid-lowering medications before recurrent	Case series	This study attempts to examine trends in and determinants of receipt of aspirin, beta-blockers and lipid-lowering agents for post	There were 1710 patients in the study population. Most of these patients were older than 65, male, white, and had no private insurance. Forty-three percent of	Over this 10-year study, there was an increase in the use of aspirin and lipid-lowering medications. There were only modest changes	Data was unavailable to measure the i contra-indicat had on medic use.

infarction: missed opportunities for prevention? / Archives of Internal Medicine / 1999		before hospitalization for reinfarction.	angina, 58.1% had hypertension, 34.3% had diabetes, 31.2% had a history of congestive heart failure, and 36.2% had a total cholesterol level greater than 5.17 mmol/L greater than 200 mg/dL. At hospital admission, 37.1% of the patients received aspirin, 37.3% received beta-blockers and 7.2% received lipid-lowering medications.	use. Clinical factors, such as contra-indications, were factors, however, non-clinical factors, such as age and sex were also relevant.	
Michihiro, Suwa, Takahide, Ito, Yoshiaki, Otake, et al / Effect of beta-blocker treatment in dilated cardiomyopathy with brady-arrhythmias / Japanese Circulation Journal / 1998	Case series	Whether or not patients with nonischemic dilated cardiomyopathy and brady-arrhythmias would experience benefit from beta-blockers in addition to pacemaker insertion.	63 patients with congestive heart failure (45 males and 18 females) age 11 to 83. Among the 63 patients, 51 were in sinus rhythm and 12 had atrial fibrillation (none were were alcohol abusers) 7 patients with bradyarrhythmias, such as AV block, sick sinus syndrome and atrial fibrillation with slow heart rate. 56 patients without. Of the 7 patients with bradyarrhythmias, 2 of them were implanted with a pacemaker	Out of the 56 patients without brady-arrhythmias, 42 responded to bisoprolol. The efficacy was reported as 75%. Of the 7 patients with brady-arrhythmias, who had a pacemaker implanted, 5 responded to bisoprolol. The efficacy rate was 71%. The authors report there is no clear distinction between the groups.	The populatio patients with arrhythmias w small (7) to re and sort of substantial conclusion. It misleading to conclude that blocker therap with pacemak implantation, beneficial for patients.

			the therapy.		
Olsson, G, Wikstrand, J, Warnold, I, et al / Metoprolol-induced reduction inj postinfarction mortality: pooled rseults from five double-blind randomized trials / European Heart Journal / 1992	Review	Five studies on metoprolol were pooled in order to determine overall mortality rates for patienst treated with the drug and those treated with a placebo. The studies were pooled because some of the studies demonstarted inconclusive results due to low statistical power.	There was a total of 5474 patienst from the five studies.4353 of the patienst were men and 1121 were women. 2753 patients were treated with metoprolol and 2721 were treated with the placebo.	There were 223 deaths in the placebo treated patients and 188 deaths in the metoprolol treated patients. The mortality rate was 97 in the placebo group and 78.3 in the treatment group per 1000 patient years.	We need mor information a the patients enrolled in ea the trials. Alth the results fr trial are noteworthy, w unable to confidently us information fo purposes of th coverage requ
Panidis, Ioannis P, Morganroth, Joel / Iniating events of sudden cardiac death / /	NA	NA	NA	NA	This chapter w not pertinent analysis.
Radford, Martha J, Krumholz, Harlan M / Beta-blockers after myocardial infarction - for few patients, or many? / The New England Journal of Medicine / 1998	Editorial	NA	NA	Beta-blockers have been found to be beneficial for certain patients. However, we lack information for patients with contra-indications, who are many times elderly. It is critical that the results demonstrated in beta-blocker trials are applied to appropriate	NA

				population.	
Ryan, T, Antmann, E, Brooks, N, et al / 1999 Update: ACC/AHA guidelines for patients with acute myocardial infarction: executive summary and recommendations / Circulation / 1999	NA	NA	NA	Survivors of myocardial infarction are treated with long-term beta-blockers provided that they do not have one or more of the following relative contra-indications: * Heart rate less than 60 bpm, * Systolic arterial pressure less than 100 mm Hg, * Moderate left ventricular failure, * Signs of peripheral hypoperfusion, * PR internal greater than 0.24 second, * Second- or third-degree atrioventricular (AV) block, * Severe chronic obstructive pulmonary disease, * History of asthma, * Severe peripheral vascular disease, or * Insulin-dependent	This is a set o guidelines joi established b American Coll Cardiology an American Hea Association. T guidelines, "I the most sign advances that occurred in th management patients with from 1996-19

				mellitus.	
Soumerai, Stephen B, McLaughlin, Thomas J, Spiegelman, Donna, et al / Adverse outcomes of underuse of beta-blockers in elderly survivors of acute myocardial infarction / JAMA: Journal of the American Medical Association / 1997	Cohort	This study seeks to discover the adverse outcomes (mortality and rehospitalization) of beta-blocker under utilization in the post MI elderly population.	Elderly persons 65 and older on Medicare, who had been discharged from a hospital from 1986 to 1990 with a principal diagnosis of AMI, were identified through one of three large, longitudinal databases. Patients were excluded id they had end-stage renal disease, lived outside of New Jersey, were hospitalized with an AMI in the 12 months preceding their index hospitalization, had died during the incident admission, were not enrolled in either the Medicaid or PAAD drug benefit program for at least 6 months before the index admission and at least 30 days after discharge, and patients discharged alive whose length of stay for the index AMI admission was less than 5 days, indicating a possible	Only 21% of eligible patients received beta-blocker therapy; this rate remained unchanged from 1987 to 1991. Controlling for other predicators of survival, the mortality rate among beta-blocker recipients was 43% less than that for nonrecipients. Beta-blockers are underused in the elderly population.	The primary s population inc post MI patie who had no measurable absolute or re contra-indicat to beta-blocke

			diagnosis.		
Spargias, KS, Hall, AS, Ball, SG / Ace inhibition in the elderly after acute myocardial infarction: insights from the AIRE study / Heart / 1998	Randomized	This article analyzed the clinical outcomes and tolerance problems associated with ace-inhibition with respect to age in a post MI population.		A 36% mortality risk reduction was demonstrated for elderly patients with heart failure, post MI, who are treated with ace inhibitors.	Note we on reviewed th abstract.
Squire, Iain B, Barnett, David B / The rationale use of B-adrenoceptor blockers in the treatment of heart failure. The changing face of an old therapy / Blackwell Science Ltd Br J Clin Pharmacol / 2000	Review	NA	NA	The available data concerning beta-blockers reflects symptomatic patients with mild to moderate heart failure. Ace-inhibitors may provide greater benefit when combined with beta- blockers.	Patients inclu these trials m adequately re patients in the elderly popula For example, patients with serious conco illnesses are common, but were not com found in trials reviewed.
The Miami Trial Research Group / Metoprolol in acute myocardial infarction (MIAMI). A randomised placebo-controlled international trial / European Heart Journal / 1985	Randomised	The cumulative mortality, average death rates, development of myocardial infarction, arrhythmias, and chest pain were among the outcomes studied.	Patients were recruited from 104 hospitals, in 17 countries. Patient eligibility was assessed as soon as possibel after hospital arrival. All patients met the followingh criteria in order to enroll in the study: less than 75 years of age, chest pain of acuet onset and	The cumulative mortality for the trial period of 15 days was 4.9%	Patients with congestive he failure, hypotension, bradycardia o block were no included.This is best to prev short-term morbidity am patients and s term mortalit high risk patie The long-term outcomes are unknown.

			minute duration with a suspician of MI, or ECG signs and symptoms of acute MI. The placebo and treatment groups were comprable at baseline.		
Tuman, Kenneth, McCarthy, Robert. / Individualizing beta-adrenergic blocker therapy: patient-specific target-based heart rate control / Anesthesia & Analgesia / 1999	Editorial	NA	NA	Clinicians select clinical variables as a guide to beta-blocker dosing. One variable typically used is heart rate.	None