

References: Cardiovascular

REF ID: 229

Level II: Individual experimental study

Topic 4.3: Management-Medication

ALLHAT Officers and Coordinators for the ALLHAT Collaborative Research, Group, & The Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial. (2002). Major outcomes in moderately hypercholesterolemic, hypertensive patients randomized to pravastatin vs usual care: The antihypertensive and lipid-lowering treatment to prevent heart attack trial (ALLHAT-LLT).[see comment]. *JAMA*, 288(23), 2998-3007. Clinical Trial. Journal Article. Multicenter Study. Randomized Controlled Trial

CONTEXT: Studies have demonstrated that statins administered to individuals with risk factors for coronary heart disease (CHD) reduce CHD events. However, many of these studies were too small to assess all-cause mortality or outcomes in important subgroups. **OBJECTIVE:** To determine whether pravastatin compared with usual care reduces all-cause mortality in older, moderately hypercholesterolemic, hypertensive participants with at least 1 additional CHD risk factor. **DESIGN AND SETTING:** Multicenter (513 primarily community-based North American clinical centers), randomized, nonblinded trial conducted from 1994 through March 2002 in a subset of participants from the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT). **PARTICIPANTS:** Ambulatory persons (n = 10 355), aged 55 years or older, with low-density lipoprotein cholesterol (LDL-C) of 120 to 189 mg/dL (100 to 129 mg/dL if known CHD) and triglycerides lower than 350 mg/dL, were randomized to pravastatin (n = 5170) or to usual care (n = 5185). Baseline mean total cholesterol was 224 mg/dL; LDL-C, 146 mg/dL; high-density lipoprotein cholesterol, 48 mg/dL; and triglycerides, 152 mg/dL. Mean age was 66 years, 49% were women, 38% black and 23% Hispanic, 14% had a history of CHD, and 35% had type 2 diabetes. **INTERVENTION:** Pravastatin, 40 mg/d, vs usual care. **MAIN OUTCOME MEASURES:** The primary outcome was all-cause mortality, with follow-up for up to 8 years. Secondary outcomes included nonfatal myocardial infarction or fatal CHD (CHD events) combined, cause-specific mortality, and cancer. **RESULTS:** Mean follow-up was 4.8 years. During the trial, 32% of usual care participants with and 29% without CHD started taking lipid-lowering drugs. At year 4, total cholesterol levels were reduced by 17% with pravastatin vs 8% with usual care; among the random sample who had LDL-C levels assessed, levels were reduced by 28% with pravastatin vs 11% with usual care. All-cause mortality was similar for the 2 groups (relative risk [RR], 0.99; 95% confidence interval [CI], 0.89-1.11; P = .88), with 6-year mortality rates of 14.9% for pravastatin vs 15.3% with usual care. CHD event rates were not significantly different between the groups (RR, 0.91; 95% CI, 0.79-1.04; P = .16), with 6-year CHD event rates of 9.3% for pravastatin and 10.4% for usual care. **CONCLUSIONS:** Pravastatin did not reduce either all-cause mortality or CHD significantly when compared with usual care in older participants with well-controlled hypertension and moderately elevated LDL-C. The results may be due to the modest differential in total cholesterol (9.6%) and

LDL-C (16.7%) between pravastatin and usual care compared with prior statin trials supporting cardiovascular disease prevention.

REF ID: 163

Level I: Systematic Reviews

Topic 4.3: Management-Medication

Amsallem, E., Kasparian, C., Haddour, G., Boissel, J. P., & Nony, P. (2006). Phosphodiesterase III inhibitors for heart failure. *Cochrane Database of Systematic Reviews, 1*
Systematic Review

Background: In the treatment of chronic heart failure, vasodilating agents, ACE inhibitors and beta-blockers have shown an increase of life expectancy. Another strategy is to increase the inotropic state of the myocardium: phosphodiesterase inhibitors (PDI) act by increasing intra-cellular cyclic AMP, thereby increasing the concentration of intracellular calcium, and lead to a positive inotropic effect.

Objectives: This overview on summarised data aims to review the data from all randomised controlled trials of PDI III versus placebo in symptomatic patients with chronic heart failure. The primary endpoint is total mortality. Secondary endpoints are considered such as cause-specific mortality, worsening of heart failure (requiring intervention), myocardial infarction, arrhythmias and vertigos. We also examine whether the therapeutic effect is consistent in the subgroups based on the use of concomitant vasodilators, the severity of heart failure, and the type of PDI derivative and/or molecule. This overview updates our previous meta-analysis published in 1994. Search strategy: Randomised trials of PDI versus placebo in heart failure were searched using MEDLINE (1966 to 2004 January), EMBASE (1980 to 2003 December), Cochrane CENTRAL trials (Issue 1, 2004) and McMaster CVD trials registries, and through an exhaustive handsearching of international abstracting publications (abstracts published in the last 22 years in the "European Heart Journal", the "Journal of the American College of Cardiology" and "Circulation").

Selection criteria: All randomised controlled trials of PDI versus placebo with a follow-up duration of more than three months. Data collection and analysis: 21 trials (8408 patients) were eligible for inclusion in the review. 4 specific PDI derivatives and 8 molecules of PDI have been considered. Main results: As compared with placebo, treatment with PDI was found to be associated with a significant 17% increased mortality rate (The relative risk was 1.17 (95% confidence interval 1.06 to 1.30; p<0.001). In addition, PDI significantly increase cardiac death, sudden death, arrhythmias and vertigos. Considering mortality from all causes, the deleterious effect of PDI appears homogeneous whatever the concomitant use (or non-use) of vasodilating agents, the severity of heart failure, the derivative or the molecule of PDI used. Conclusions: Our results confirm that PDI are responsible for an increase in mortality rate compared with placebo in patients suffering from chronic heart failure. Currently available results do not support the hypothesis that the increased mortality rate is due to additional vasodilator treatment. Consequently, the chronic use of PDI should be avoided in heart failure patients.

REF ID: 197

QM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Asch, S. M., Baker, D. W., Keeseey, J. W., Broder, M., Schonlau, M., & Rosen, M. et al. (2005 Jul). Does the collaborative model improve care for chronic heart failure? *Medical Care*, 43(7), 667-675.

Journal Article

BACKGROUND: Organizationally based, disease-targeted collaborative quality improvement efforts are widely applied but have not been subject to rigorous evaluation. We evaluated the effects of the Institute of Healthcare Improvement's Breakthrough Series (IHI BTS) on quality of care for chronic heart failure (CHF). **RESEARCH DESIGN:** We conducted a quasi-experiment in 4 organizations participating in the IHI BTS for CHF in 1999-2000 and 4 comparable control organizations. We reviewed a total of 489 medical records obtained from the sites and used a computerized data collection tool to measure performance on 23 predefined quality indicators. We then compared differences in indicator performance between the baseline and post-intervention periods for participating and non-participating organizations. **RESULTS:** Participating and control patients did not differ significantly with regard to measured clinical factors at baseline. After adjusting for age, gender, number of chronic conditions, and clustering by site, participating sites showed greater improvement than control sites for 11 of the 21 indicators, including use of lipid-lowering and angiotensin converting enzyme inhibition therapy. When all indicators were combined into a single overall process score, participating sites improved more than controls (17% versus 1%, $P < 0.0001$). The improvement was greatest for measures of education and counseling (24% versus -1%, $P < 0.0001$). **CONCLUSIONS:** Organizational participation in a common disease-targeted collaborative provider interaction improved a wide range of processes of care for CHF, including both medical therapeutics and education and counseling. Our data support the use of programs like the IHI BTS in improving the processes of care for patients with chronic diseases.

REF ID: 151

Level I: Systematic Reviews

Topic 2: Prevention

Topic 3: Assessment

Bennett, S. J., & Sauve, M. J. (2003). Cognitive deficits in patients with heart failure: A review of the literature. *Journal of Cardiovascular Nursing*, 18(3), 219-242.

Journal Article, Glossary, Research, Systematic Review, Tables/Charts

PURPOSE: Chronic heart failure (HF) and cognitive impairments (CI) are common problems in the elderly. Both are associated with increased mortality and disability, decreased quality of life, and increased health care costs. While these conditions may occur by chance in the same individual, there is increasing evidence that HF is independently associated with CI. The purpose of this article is to review and critique the literature addressing the prevalence, type, and severity of CI in HF patients, the clinical factors associated with CI, and the potential pathophysiology underlying the development of CI, and to recommend priority areas for future research. **RESULTS:** Memory and attention deficits are the most frequently occurring CI in this patient population, followed by slowed motor response times

and difficulties in problem solving. Prevalence rates range from 30% to 80% depending upon the age of the patients and the characteristics of the sample being studied. Most patients have mild impairments, although as many as one fourth may have moderate to severe CI. The relationship between left ventricular ejection fraction and cognition is inconsistent and may be nonlinear. The pathophysiology underlying the development of CI in HF patients may be related to both cerebral infarction and cerebral hypoperfusion either alone or in combination.

CONCLUSIONS: The current literature is limited by studies with sometimes small or nonrepresentative samples, few matched control studies, and lack of longitudinal data that could indicate the conditions that favor the development of CI over time. Future research needs to focus on (1) determining the types, frequency, and severity of impairments in cognitive functioning among a representative sample of HF patients, (2) explicating the pathological mechanisms and the clinical factors that underlie the development of cognitive deficits, and (3) identifying the ways CI influences quality of life. Interventions can then be developed to prevent or delay the occurrence of CI or to minimize their effect on patient self-management and quality of life.

REF ID: 141

Level I: Systematic Reviews

Topic 4.3: Management-Medication

Chaudhry, S. I., Krumholz, H. M., & Foody, J. M. (2004). Clinical review. systolic hypertension in older persons. *JAMA: Journal of the American Medical Association*, 292(9), 1074-1080.

Journal Article, Research, Systematic Review, Tables/Charts

CONTEXT: The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure emphasizes the importance of **systolic hypertension (SH)**, defined as **systolic** blood pressure (SBP) of at least 140 mm Hg and diastolic blood pressure of less than 90 mm Hg, in **older persons** (> or =60 years). **OBJECTIVE:** To systematically review the literature on clinical management of SH in **older persons**. **DATA SOURCES:** We performed a MEDLINE search of English-language literature from 1966-2004 to identify reports about SH in **older persons**, with particular emphasis on data from randomized clinical trials. **STUDY SELECTION AND DATA EXTRACTION:** We selected 1064 studies by using the search terms **hypertension** combined with the terms systole (or **systolic**) and aged. **DATA SYNTHESIS:** There is strong evidence from clinical trials to support the treatment of SH in **older persons** with SBP of at least 160 mm Hg. Large-scale trials to assess the value of antihypertensive therapy for **older** patients with SBP of 140 to 159 mm Hg have not been performed, and recommendations to treat these patients are based on observational studies that show a graded relationship of cardiovascular risk with increasing SBP. The studies most strongly support the use of thiazide diuretics and long-acting calcium channel blockers as first-line therapy to treat SH. **CONCLUSIONS:** Treatment of SH in **older** patients with SBP of at least 160 mm Hg is supported by strong evidence. The evidence available to support treatment of patients to the level of 140 mm Hg or those with baseline SBP of 140 to 159 mm Hg is less strong; thus, these treatment decisions should be more sensitive to patient preferences and tolerance of therapy.

REF ID: 195

OM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Clark, A. (2005). Research. measuring quality of care nationwide. *Caring*, 24(3), 42-45.

Journal Article, Tables/Charts

This his brief summarizes a study conducted by researchers at the RAND Corporation that measured the quality of health care for randomly selected adults from 12 communities across the United States. Because the researchers used 439 quality indicators to evaluate health care performance in 30 clinical areas, including diabetes mellitus, hypertension, heart disease, and related preventive care, the size and comprehensiveness of this study is particularly noteworthy. The findings reveal comparable deficits in adherence to standard care processes by both inpatient and outpatient providers within the 12 chosen communities. Overall, study participants received only half of the care consistent with evidence-based knowledge. Thus, study results provide systematic evidence detailing the gaps between the science and the practice of health care delivery throughout the country.

REF ID: 225

Level II: Individual experimental study

Topic 4.3: Management-Medication

Cleland, J. G., Findlay, I., Jafri, S., Sutton, G., Falk, R., & Bulpitt, C. et al. (2004). The Warfarin/Aspirin study in heart failure (WASH): A randomized trial comparing antithrombotic strategies for patients with heart failure. *American Heart Journal*, 148(1), 157-164.

Clinical Trial. Journal Article. Multicenter Study. Randomized Controlled Trial

BACKGROUND: Heart failure is commonly associated with vascular disease and a high rate of athero-thrombotic events, but the risks and benefits of antithrombotic therapy are unknown. **METHODS:** The current study was an open-label, randomized, controlled trial comparing no antithrombotic therapy, aspirin (300 mg/day), and warfarin (target international normalized ratio 2.5) in patients with heart failure and left ventricular systolic dysfunction requiring diuretic therapy. The primary objective was to demonstrate the feasibility and inform the design of a larger outcome study. The primary clinical outcome was death, nonfatal myocardial infarction, or nonfatal stroke. **RESULTS:** Two hundred seventy-nine patients were randomized and 627 patient-years exposure were accumulated over a mean follow-up time of 27 +/- 1 months. Twenty-six (26%), 29 (32%), and 23 (26%) patients randomized to no antithrombotic treatment, aspirin, and warfarin, respectively, reached the primary outcome (ns). There were trends to a worse outcome among those randomized to aspirin for a number of secondary outcomes. Significantly (P =.044) more patients randomized to aspirin were hospitalized for cardiovascular reasons, especially worsening heart failure. **CONCLUSIONS:** The Warfarin/Aspirin Study in Heart failure (WASH) provides no evidence that aspirin is effective or safe in patients with heart failure. The benefits of warfarin for patients with heart failure

in sinus rhythm have not been established. Antithrombotic therapy in patients with heart failure is not evidence based but commonly contributes to polypharmacy.

REF ID: 146

Level I: Systematic Reviews

Topic 3: Assessment

Coventry, P. A., Grande, G. E., Richards, D. A., & Todd, C. J. (2005). Prediction of appropriate timing of palliative care for older adults with non-malignant life-threatening disease: A systematic review. *Age and Ageing*, 34(3), 218-227.

Journal Article, Research, Systematic Review, Tables/Charts

BACKGROUND: most people in contemporary western society die of the chronic diseases of old age. Whilst palliative care is appropriate for elderly patients with chronic, non-malignant disease, few of these patients access such care compared with cancer patients. Objective referral criteria based on accurate estimation of survival may facilitate more timely referral of non-cancer patients most appropriate for specialist palliative care. **OBJECTIVE:** to identify tools and predictor variables that might aid clinicians estimate survival and assess palliative status in non-cancer patients aged 65 years and older. **METHODS:** systematic review and quality assessment using criteria modified from the literature. **RESULTS:** 11 studies that evaluated prognoses in hospitalised and community-based older adults with non-malignant disease were identified. Key generic predictors of survival were increased dependency of activities of daily living, presence of comorbidities, poor nutritional status and weight loss, and abnormal vital signs and laboratory values. Disease-specific predictors of survival were identified for dementia, chronic obstructive pulmonary disorder and congestive heart failure. No study evaluated the relationship between survival and palliative status. **CONCLUSION:** prognostic models that attempt to estimate survival of < or = 6 months in non-cancer patients have generally poor discrimination, reflecting the unpredictable nature of most non-malignant disease. However, a number of generic and disease-specific predictor variables were identified that may help clinicians identify older, non-cancer patients with poor prognoses and palliative care needs. Simple, well-validated prognostic models that provide clinicians with objective measures of palliative status in non-cancer patients are needed. Additionally, research that evaluates the effect of general and specialist palliative care on psychosocial outcomes in non-cancer patients and their carers is needed.

REF ID: 221

Level I: Systematic Reviews

Topic 4.3: Management-Medication

Dulin, B. R., Haas, S. J., Abraham, W. T., & Krum, H. (2005). Do elderly systolic heart failure patients benefit from beta blockers to the same extent as the non-elderly? meta-analysis of >12,000 patients in large-scale clinical trials. *American Journal of Cardiology*, 95(7), 896-898.

Journal Article. Meta-Analysis

A meta-analysis of all-cause mortality data involving elderly and non-elderly chronic heart failure patients from 5 completed beta-blocker trials revealed that elderly and non-elderly chronic heart failure patients derived considerable prognostic benefit

from beta-blocker therapy without a statistically significant difference in mortality reduction between the 2 groups.

REF ID: 232

Level II: Individual experimental study

Topic 4.3: Management-Medication

Effects of Pimobendan on Chronic Heart Failure Study (EPOCH Study). (2002). Effects of pimobendan on adverse cardiac events and physical activities in patients with mild to moderate chronic heart failure: The effects of pimobendan on chronic heart failure study (EPOCH study). *Circulation Journal*, 66(2), 149-157.

Clinical Trial. Journal Article. Multicenter Study. Randomized Controlled Trial

The long-term beneficial effects of pimobendan in the treatment of chronic heart failure (CHF) have not been established, so the present trial compared pimobendan (1.25 or 2.5mg twice daily) vs placebo in 306 patients with stable New York Heart Association class II or III CHF, and a radionuclide or echocardiographic left ventricular ejection fraction (LVEF) \leq 45% despite optimal treatment with conventional therapy, for up to 52 weeks in a double-blind protocol. At the end of the 52 weeks of treatment, combined adverse cardiac events had occurred in 19 patients in the pimobendan group (15.9%) vs 33 patients in the placebo group (26.3%). The cumulative incidence of combined adverse cardiac events was 45% lower (95% confidence interval of hazard ratio: 0.31-0.97, log-rank test: $p=0.035$) in the pimobendan group than in the placebo group. Death and hospitalization for cardiac causes occurred in 12 patients in the pimobendan group (10.1%), vs 19 patients in the placebo group (15.3%), but without significant difference. Treatment with pimobendan also increased the mean Specific Activity Scale score from 4.39 \pm 0.12 at baseline to 4.68 \pm 0.15 at 52 weeks ($p<0.05$). In conclusion, long-term treatment with pimobendan significantly lowered morbidity and improved the physical activity of patients with mild to moderate CHF.

REF ID: 154

Level I: Systematic Reviews

Topic 4.2: Management-Behavior Therapy

Topic 2: Prevention

Fahey, T., Schroeder, K., & Ebrahim, S. (2005). Interventions used to improve control of blood pressure in patients with hypertension.[see comment]. [review] [62 refs]. *Cochrane Database of Systematic Reviews*, (1), 005182.

Journal Article. Meta-Analysis. Review

BACKGROUND: It is well recognized that patients with high blood pressure (hypertension) in the community frequently fail to meet treatment goals- a condition labeled as "uncontrolled" hypertension. The optimal way in which to organize and deliver care to patients who have hypertension so that they reach treatment goals has not been clearly identified. **OBJECTIVES:** To determine the effectiveness of interventions to improve control of blood pressure in patients with elevated blood pressure. To evaluate the ability of reminders to improve the follow-up of patients with elevated blood pressure. **SEARCH STRATEGY:** All-language search of all articles (any year) in the Cochrane Controlled Trials Register (CCTR), Medline and

Embase from June 2000. SELECTION CRITERIA: Randomised controlled trials (RCTs) of patients with hypertension that evaluated the following interventions: (1) self-monitoring (2) educational interventions directed to the patient (3) educational interventions directed to the health professional (4) health professional (nurse or pharmacist) led care (5) organisational interventions that aimed to improve the delivery of care (6) appointment reminder systems. OUTCOMES ASSESSED WERE: (1) mean systolic and diastolic blood pressure (2) control of blood pressure (3) proportion of patients followed up at clinic. DATA COLLECTION AND ANALYSIS: Two authors extracted data independently and in duplicate and assessed each study according to the criteria outlined by the Cochrane Collaboration Handbook. MAIN RESULTS: 59 RCTs met our inclusion criteria. The methodological quality of included studies was variable. An organized system of regular review linked to vigorous antihypertensive drug therapy was shown to reduce blood pressure (weighted mean difference -8.2/-4.2 mmHg, -11.7/-6.5 mmHg, -10.6/-7.6 mmHg for 3 strata of entry blood pressure) and all-cause mortality at five years follow-up (6.38% versus 7.78%, difference 1.4%) in a single large RCT- the Hypertension Detection and Follow-Up study. Other interventions had variable effects. Self-monitoring was associated with moderate net reduction in diastolic blood pressure (weighted mean difference (WMD): -2.03 mmHg, 95%CI: -2.69 to -1.38 mmHg, respectively). Appointment reminders increased the proportion of individuals who attended for follow-up. RCTs of educational interventions directed at patients or health professionals were heterogeneous but appeared unlikely to be associated with large net reductions in blood pressure by themselves. Health professional (nurse or pharmacist) led care may be a promising way of delivering care, with the majority of RCTs being associated with improved blood pressure control, but requires further evaluation. AUTHORS' CONCLUSIONS: Family practices and community-based clinics need to have an organized system of regular follow-up and review of their hypertensive patients. Antihypertensive drug therapy should be implemented by means of a systematic stepped care approach when patients do not reach target blood pressure levels. [References: 62]

REF ID: 196

QM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Fonarow GC. Yancy CW. Heywood JT. ADHERE Scientific Advisory Committee, Study Group, and Investigators. (2005 Jul 11). Adherence to heart failure quality-of-care indicators in US hospitals: Analysis of the ADHERE registry.[see comment]. *Archives of Internal Medicine*, 165(13), 1469-1477. Journal Article. Multicenter Study

BACKGROUND: Quality-of-care indicators have been developed for patients hospitalized with heart failure. However, little is known about current rates of conformity with these indicators or their variability across hospitals. METHODS: Data from 81 142 admissions occurring between July 1, 2002, and December 31, 2003, at 223 academic and non-academic hospitals in the United States participating in the Acute Decompensated Heart Failure National Registry (ADHERE) were analyzed. Rates of conformity with the 4 Joint Commission on Accreditation of

Healthcare Organizations core performance measures--discharge instructions (HF-1), assessment of left ventricular function (HF-2), use of angiotensin-converting enzyme inhibitors in patients with left ventricular systolic dysfunction (HF-3), and smoking cessation counseling (HF-4)--as well as length of stay and in-hospital mortality rates were computed. RESULTS: Across all hospitals, the median rates of conformity with HF-1, HF-2, HF-3, and HF-4 were 24.0%, 86.2%, 72.0%, and 43.2%, respectively. Rates of conformity at individual hospitals varied from 0% to 100%, with statistically significant differences between academic and non-academic hospitals. Statistically significant positive independent predictors of overall conformity included the prevalence of comorbidities and the use of more intense pharmacologic management. Median hospital length of stay varied from 2.3 to 9.5 days, and in-hospital mortality varied from 0% to 11.1%. CONCLUSIONS: Among hospitals providing care for patients with heart failure, there is significant individual variability in conformity to quality-of-care indicators and clinical outcomes and a substantial gap in overall performance. Establishing educational initiatives and quality improvement systems to reduce this variability and eliminate this gap would be expected to substantially improve the care of these patients.

REF ID: 193

QM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Fonarow, G. C. (2001). Quality indicators for the management of heart failure in vulnerable elders. *Annals of Internal Medicine*, 135(8 part 2), 694-702.

Journal Article, Tables/Charts

REF ID: 187

QM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Galvao, M., & ADHERE Scientific Advisory Committee (SAC), Investigators, Coordinators, and Study Group. (2005). Reshaping our perception of the typical hospitalized heart failure patient: A gender analysis of data from the ADHERE heart failure registry. *Journal of Cardiovascular Nursing*, 20(6), 442-450.

Journal Article, Research, Tables/Charts

Heart failure studies have suggested important differences between women and men both in heart failure etiology and in survival. Clinical trials and long-standing perceptions of the typical heart failure patient have related far more to men than to women, while more women than men in the United States may be hospitalized with heart failure. The goal of this study was to analyze ADHERE Registry data, the largest database of acute decompensated heart failure (ADHF) patient hospitalizations available, to gain insight into the effect of gender on medical history, clinical characteristics, and discharge counseling. This preliminary study analyzed the 85,617 ADHF hospitalizations in the ADHERE Registry as of October 2003, with 44,340 (52%) women and 41,276 (48%) men included. Women were significantly older (mean age 74.6 +/- 13.7 years) than men (mean age 70.2 +/- 13.9 years, P 140 mm Hg (56% vs. 44%, P 140 mm Hg (56% vs. 44%, P 140 mm Hg

(56% vs. 44%, P 140 mm Hg (56% vs. 44%, P 40%) compared to only 28% of men (P < 0.0001). At discharge, adherence to 3 of the 4 JCAHO standardized measures of quality of care for heart failure patients were documented more frequently for men than for women. A significantly smaller proportion of women received discharge instructions on management of diet, weight, and medications (30.1% vs. 32.8%); received or were scheduled for assessment of left ventricular function (81.5% vs. 85.6%); or were discharged with an angiotensin converting enzyme inhibitor prescription if appropriate (72.6% vs. 73.9%). Real-world data from the ADHERE Registry may lead to better recognition of the signs and symptoms of heart failure in women, increase the proportion of women who are correctly diagnosed, and may help to support gender-specific considerations in heart failure guidelines.

REF ID: 191

QM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Gesell, S. B., Clark, P. A., Mylod, D. E., Wolosin, R. J., Drain, M., & Lanser, P. et al. (2005). Hospital-level correlation between clinical and service quality performance for heart failure treatment. *Journal for Healthcare Quality*, 27(6), 33-44.

Journal Article, Research, Tables/Charts

A national cross-sectional study correlates the satisfaction ratings of heart failure patients (diagnosis related group 127) and the Centers for Medicare & Medicaid Services' process-based quality measures for heart failure treatment for 32 hospitals during the first and second quarters of 2004. Two of the four measures of clinical quality showed statistically significant, moderately strong, positive correlations with a global measure of satisfaction and with, respectively, 5 and 7 subscales of the 10 subscales of satisfaction under examination (Pearson's r ranged between .40 and .67, 2-tailed; p < .05). Findings demonstrate that quality need not be a zero-sum issue, with clinical quality and service quality competing for resources and attention.

REF ID: 224

Level I: Systematic Reviews

Topic 4.1: Management-General

Gonseth, J., Guallar-Castillon, P., Banegas, J. R., & Rodriguez-Artalejo, F. (2004). The effectiveness of disease management programmes in reducing hospital re-admission in older patients with heart failure: A systematic review and meta-analysis of published reports.[see comment]. [review] [113 refs]. *European Heart Journal*, 25(18), 1570-1595.

Journal Article. Meta-Analysis. Review

AIMS: To systematically evaluate the published evidence regarding the effectiveness of disease management programmes (DMPs) reducing hospital re-admissions among elderly patients with heart failure (HF). METHODS and RESULTS: Computerised search of MEDLINE (1966 to 31 August 2003) and EMBASE (1966 to 31 August 2003). The Cochrane Library was also searched, and reference lists of review articles on the topic, and of all relevant studies identified, were scanned. Search and selection of studies, data-extraction using standardised forms, and assessment of study quality was performed by two reviewers. The end-

point was the proportion of persons who underwent hospital re-admission, and pooled relative risks (RR) were used to summarise the effectiveness of DMPs. The meta-analysis included 54 articles, comprising 27 randomised and 27 non-randomised controlled studies. Randomised studies consistently suggested that, in comparison with usual care, DMP reduced the frequency of re-admission for HF or cardiovascular disease by 30% (pooled RR 0.70; confidence interval (CI) 95% 0.62-0.79), all-cause re-admission by 12% (pooled RR 0.88, 95% CI: 0.79-0.97), and the combined event of re-admission or death by 18% (pooled RR 0.82, 95% CI: 0.72-0.94). The results displayed no substantial variation when only DMPs with home visits, out-patient visits to a clinic, or patient follow-up longer than 6 months were included. For DMPs with out-patient clinical visits, however, the reduction in re-admission for HF or cardiovascular disease, and for all causes, did not attain statistical significance. The magnitude of DMP benefits reported by non-randomised studies was more than double that reported by randomised studies. Practically all the non-randomised studies failed to control for confounding factors, such as severity, co-morbidity and drug therapy. **CONCLUSION:** DMPs are effective at reducing re-admissions among elderly patients with HF. Their effectiveness is close to that observed in clinical trials evaluating drugs for HF, such as angiotensin-converting enzyme inhibitors, beta-blockers or digoxin. However, since none of the DMP studies compared different interventions directly, we do not know the relative effectiveness of types of healthcare delivery within the DMP. [References: 113]

REF ID: 223

Level I: Systematic Reviews

Topic 4.1: Management-General

Gwadry-Sridhar, F. H., Flintoft, V., Lee, D. S., Lee, H., & Guyatt, G. H. (2004). A systematic review and meta-analysis of studies comparing readmission rates and mortality rates in patients with heart failure.[see comment]. [review] [27 refs]. *Archives of Internal Medicine*, 164(21), 2315-2320.

Journal Article. Meta-Analysis. Review

BACKGROUND: Heart failure is the leading cause of hospitalization and readmission in many hospitals worldwide. We performed a meta-analysis to evaluate the effectiveness of multidisciplinary heart failure management programs on hospital admission rates. **METHODS:** We identified studies through an electronic search and mortality using 8 distinct methods. Eligible studies met the following criteria: (1) randomized controlled clinical trials of adult inpatients hospitalized for heart failure enrolled either at the time of discharge or within 1 week after discharge; (2) heart failure-specific patient education intervention coupled with a postdischarge follow-up assessment; and (3) unplanned readmission reported. Four reviewers independently assessed each study for eligibility and quality, achieving a weighted kappa of 0.73 for eligibility and 0.77 for quality. For each study we calculated the relative risk for readmissions and mortality for patients receiving enhanced education relative to patients receiving usual care. **RESULTS:** A total of 529 citation titles were identified, of which 8 randomized trials proved eligible. The pooled relative risk for hospital readmission rates using a random-effects model was 0.79 (95% confidence interval, 0.68-0.91; $P < .001$; heterogeneity $P = .25$). There was no apparent effect on mortality (relative risk, 0.98; 95% confidence interval, 0.72-1.34;

P = .90; heterogeneity P = .20). Data were insufficient to meaningfully pool intervention effects on quality of life or compliance. CONCLUSION: This systematic review suggests that specific heart failure-targeted interventions significantly decrease hospital readmissions but do not affect mortality rates. [References: 27]

REF ID: 155

Level I: Systematic Reviews

Topic 4.6: Management-Other

He, F. J., & MacGregor, G. A. (2004). Effect of longer-term modest salt reduction on blood pressure. [review] [173 refs]. *Cochrane Database of Systematic Reviews*, (3), 004937.

Journal Article. Meta-Analysis. Review

BACKGROUND: Many randomised trials assessing the effect of salt reduction on blood pressure show reduction in blood pressure in individuals with high blood pressure. However, there is controversy about the magnitude and the clinical significance of the fall in blood pressure in individuals with normal blood pressure. Several meta-analyses of randomised salt reduction trials have been published in the last few years. However, most of these included trials of very short duration (e.g. 5 days) and included trials with salt loading followed by salt deprivation (e.g. from 20 to 1 g/day) over only a few days. These short-term experiments are not appropriate to inform public health policy which is for a modest reduction in salt intake over a prolonged period of time. A meta-analysis by Hooper et al is an important attempt to look at whether advice to achieve a long-term salt reduction (i.e. more than 6 months) in randomised trials causes a fall in blood pressure. However, most trials included in this meta-analysis achieved a small reduction in salt intake; on average, salt intake was reduced by 2 g/day. It is, therefore, not surprising that this analysis showed a small fall in blood pressure, and that a dose-response to salt reduction was not demonstrable. **OBJECTIVES:** To assess the effect of the currently recommended modest reduction in salt intake (WHO 2003; SACN 2003; Whelton 2002), on blood pressure in individuals with normal and elevated blood pressure. To assess whether the magnitude of the reduction in blood pressure is dependent on the magnitude of the reduction in salt intake. **SEARCH STRATEGY:** We searched MEDLINE, EMBASE, Cochrane library, CINAHL, and reference list of original and review articles. **SELECTION CRITERIA:** We included randomised trials with a modest reduction in salt intake and a duration of 4 or more weeks. **DATA COLLECTION AND ANALYSIS:** Data were extracted independently by two persons. Mean effect sizes were calculated using both fixed and random effect models using Review Manager 4.2.1 software. Weighted linear regression was used to examine the relationship between the change in urinary sodium and the change in blood pressure. We used funnel plots to detect publication and other biases in the meta-analysis. **MAIN RESULTS:** Seventeen trials in individuals with elevated blood pressure (n=734) and 11 trials in individuals with normal blood pressure (n=2220) were included. In individuals with elevated blood pressure the median reduction in 24-h urinary sodium excretion was 78 mmol (4.6 g/day of salt), the mean reduction in systolic blood pressure was -4.97 mmHg (95% CI: -5.76 to -4.18), and the mean reduction in diastolic blood pressure was -2.74 mmHg (95% CI: -3.22 to -2.26). In

individuals with normal blood pressure the median reduction in 24-h urinary sodium excretion was 74 mmol (4.4 g/day of salt), the mean reduction in systolic blood pressure was -2.03 mmHg (95% CI: -2.56 to -1.50) mmHg, and the mean reduction in diastolic blood pressure was -0.99 mmHg (-1.40 to -0.57). Weighted linear regression analyses showed a correlation between the reduction in urinary sodium and the reduction in blood pressure. REVIEWERS' CONCLUSIONS: Our meta-analysis demonstrates that a modest reduction in salt intake for a duration of 4 or more weeks has a significant and, from a population viewpoint, important effect on blood pressure in both individuals with normal and elevated blood pressure. These results support other evidence suggesting that a modest and long-term reduction in population salt intake could reduce strokes, heart attacks, and heart failure. Furthermore, our meta-analysis demonstrates a correlation between the magnitude of salt reduction and the magnitude of blood pressure reduction. Within the daily intake range of 3 to 12 g/day, the lower the salt intake achieved, the lower the blood pressure. [References: 173]

REF ID: 200

QM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Hebb, J. H., Fitzgerald, D., & Fan, W. (2003). Health care disparities in disadvantaged medicare beneficiaries: A national project review. *Journal of Health & Human Services Administration, 26*(2), 153-173.

Journal Article

The wealth of literature documenting differences in health care utilization by race and ethnicity underscores the need to develop a system to effectively measure health care related disparities. The Centers for Medicare & Medicaid Services has taken the first steps toward detailing the quality of care for fee-for-service (FFS) Medicare beneficiaries. Using data collected for the two-period 1997-1999 on a cross-section of beneficiaries from all states and territories of the U.S., quality was measured using a set of 24 indicators of care. The results of this effort were reported in the October 4, 2000 issue of the *Journal of the American Medical Association*. This article reports similar measures of quality but focuses specifically on disparities in the indicators among five disadvantaged Medicare beneficiary groups: African-American, American Indian/Alaska Natives, Asian/Pacific Islanders, Hispanics, and Medicare beneficiaries enrolled in Medicaid (dually enrolled). These indicators serve as a baseline for tracking quality improvement within disadvantaged populations and evaluating the success of efforts to reduce health care disparities at the national level. The findings suggest that patterns of disparities exist in both the inpatient and outpatient settings for disadvantaged beneficiaries. Over the next decade, the composition of Medicare beneficiaries will become more diverse. This increasing diversity makes it imperative to identify and monitor the existence and extent of health care disparities. The consistent and ongoing evaluation of racial, ethnic, and socioeconomic disparities should provide an incentive to create effective preventive programs tailored to specific community needs.

REF ID: 165

Level I: Systematic Reviews

Topic 4.3: Management-Medication

Hood, W. B. J., Dans, A. L., Guyatt, G. H., Jaeschke, R., & McMurray, J. J. V. (2006). Digitalis for treatment of congestive heart failure in patients in sinus rhythm. *Cochrane Database of Systematic Reviews*, 1

Systematic Review

Background: Digitalis glycosides have been in clinical use in the treatment of congestive heart failure (CHF) for more than 200 years. In recent years several trials have been conducted to address concerns about efficacy and toxicity. Although a systematic review of the literature was published in 1990, an update is required to include more current trials. Objectives: To examine the effectiveness of digitalis glycosides in treating CHF in patients with normal sinus rhythm. To examine the effect of digitalis in patients taking diuretics, angiotensin converting enzyme inhibitors, and beta-blockers; patients with varying severity and duration of disease; patients with prior exposure to digitalis vs. no prior exposure; and patients with "CHF due to systolic dysfunction" vs. "CHF with preserved systolic function." Search strategy: The Cochrane Central Register of Controlled Trials (CENTRAL) 2003 Issue 4, MEDLINE (1966 to December 2003) and EMBASE (1990 to December 2003) were searched. Dissertation Abstracts and annual meeting abstracts of the American Heart Association, American College of Cardiology, and European Society of Cardiology were also searched from 1996-2003. In addition, reference lists provided by the pharmaceutical industry (Glaxo Wellcome Inc.) were searched. Selection criteria: Included were randomized placebo-controlled trials of 20 or more adult patients of either sex with symptomatic CHF who were studied for seven weeks or more. Excluded were trials in which the prevalence of atrial fibrillation was 2% or greater, or in which any arrhythmia that might compromise cardiac function or any potentially reversible cause of CHF such as acute ischemic heart disease or myocarditis was present. Data collection and analysis: Articles selected from the searches described above were evaluated as a joint effort of the coauthors. The staff of the Cochrane Heart Group ran searches on the Cochrane Central Register of Controlled Trials. Main results: Thirteen articles meeting the defined criteria were identified, and major endpoints of mortality, hospitalization, and clinical status, based respectively upon 8, 4, and 12 of these selected studies, were recorded and analyzed. The data show that there is no evidence of a difference in mortality between treatment and control groups, whereas digitalis therapy is associated with a lower rate of hospitalization and of clinical deterioration. Conclusions: The literature indicates that digitalis has a useful role in the treatment of patients with CHF who are in normal sinus rhythm.

REF ID: 158

Level I: Systematic Reviews

Topic 4.6: Management-Other

Hooper, L., Bartlett, C., Davey, S. G., & Ebrahim, S. (2004). Advice to reduce dietary salt for prevention of cardiovascular disease.[update of cochrane database syst rev. 2003;(3):CD003656; PMID: 12917977]. [review] [109 refs]. *Cochrane Database of Systematic Reviews*, (1), 003656.

Journal Article. Meta-Analysis. Review

BACKGROUND: Restricting sodium intake in elevated blood pressure over short

periods of time reduces blood pressure. Long term effects (on mortality, morbidity or blood pressure) of advice to reduce salt in patients with elevated or normal blood pressure are unclear. OBJECTIVES: To assess in adults the long term effects (mortality, cardiovascular events, blood pressure, quality of life, weight, urinary sodium excretion, other nutrients and use of anti-hypertensive medications) of advice to restrict dietary sodium using all relevant randomised controlled trials. SEARCH STRATEGY: The Cochrane Library, MEDLINE, EMBASE, bibliographies of included studies and related systematic reviews were searched for unconfounded randomised trials in healthy adults aiming to reduce sodium intake over at least 6 months. Attempts were made to trace unpublished or missed studies and authors of all included trials were contacted. There were no language restrictions. SELECTION CRITERIA: Inclusion decisions were independently duplicated and based on the following criteria: 1) randomisation was adequate; 2) there was a usual or control diet group; 3) the intervention aimed to reduce sodium intake; 4) the intervention was not multifactorial; 5) the participants were not children, acutely ill, pregnant or institutionalised; 6) follow-up was at least 26 weeks; 7) data on any of the outcomes of interest were available. DATA COLLECTION AND ANALYSIS: Decisions on validity and data extraction were made independently by two reviewers, disagreements were resolved by discussion or if necessary by a third reviewer. Random effects meta-analysis, sub-grouping, sensitivity analysis and meta-regression were performed. MAIN RESULTS: Three trials in normotensives (n=2326), five in untreated hypertensives (n=387) and three in treated hypertensives (n=801) were included, with follow up from six months to seven years. The large, high quality (and therefore most informative) studies used intensive behavioural interventions. Deaths and cardiovascular events were inconsistently defined and reported; only 17 deaths equally distributed between intervention and control groups occurred. Systolic and diastolic blood pressures were reduced at 13 to 60 months in those given low sodium advice as compared with controls (systolic by 1.1 mm Hg, 95% CI 1.8 to 0.4, diastolic by 0.6 mm hg, 95% CI 1.5 to -0.3), as was urinary 24 hour sodium excretion (by 35.5 mmol/ 24 hours, 95% CI 47.2 to 23.9). Degree of reduction in sodium intake and change in blood pressure were not related. People on anti-hypertensive medications were able to stop their medication more often on a reduced sodium diet as compared with controls, while maintaining similar blood pressure control. REVIEWER'S CONCLUSIONS: Intensive interventions, unsuited to primary care or population prevention programmes, provide only minimal reductions in blood pressure during long-term trials. Further evaluations to assess effects on morbidity and mortality outcomes are needed for populations as a whole and for patients with elevated blood pressure. Evidence from a large and small trial showed that a low sodium diet helps in maintenance of lower blood pressure following withdrawal of antihypertensives. If this is confirmed, with no increase in cardiovascular events, then targeting of comprehensive dietary and behavioural programmes in patients with elevated blood pressure requiring drug treatment would be justified. [References: 109]

REF ID: 144

Level I: Systematic Reviews

Topic 4.3: Management-Medication

Ignacio, R. F., & Fields, S. D. (2002). Is the verdict out? A systematic review of pharmacotherapy for hypertension in the elderly. *Journal of the American Geriatrics Society*, 50(6), 1156-1158.

Journal Article, Research, Systematic Review

REF ID: 189

QM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Jha, A. K., Li, Z., Orav, E. J., & Epstein, A. M. (2005). Care in U.S. hospitals -- the hospital quality alliance program. *New England Journal of Medicine*, 353(3), 265-74, 325-8.

Journal Article, CEU, Exam Questions, Research, Tables/Charts

BACKGROUND: The Hospital Quality Alliance (HQA) is the first initiative that routinely reports data on hospitals' performance nationally. Heretofore, such data have been unavailable. **METHODS:** We used data collected by the Centers for Medicare and Medicaid Services on 10 indicators of the quality of care for acute myocardial infarction, congestive heart failure, and pneumonia. The main outcome measures were hospitals' performance with respect to each indicator and summary scores for each clinical condition. Predictors of a high level of performance were determined with the use of multivariable linear regression. **RESULTS:** A total of 3558 hospitals reported data on at least one stable measure (defined as information obtained from discharge data from at least 25 patients) during the first half of 2004. Median performance scores (expressed as the percentage of patients who satisfied the criterion) were at least 90 percent for 5 of the 10 measures but lower for the other 5. Performance varied moderately among large hospital-referral regions, with the top-ranked regions scoring 12 percentage points (for acute myocardial infarction) to 23 percentage points (for pneumonia) higher than the bottom-ranked regions. A high quality of care for acute myocardial infarction predicted a high quality of care for congestive heart failure but was only marginally better than chance at predicting a high quality of care for pneumonia. Characteristics associated with small but significant increases in performance included being an academic hospital, being in the Northeast or Midwest, and being a not-for-profit hospital. **CONCLUSIONS:** Analysis of data from the new HQA national reporting system shows that performance varies among hospitals and across indicators. Given this variation and small differences based on hospitals' characteristics, performance reporting will probably need to include numerous clinical conditions from a broad range of hospitals.

REF ID: 186

QM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Kahn CN, I. I. I., Ault, T., Isenstein, H., Potetz, L., & Van Gelder, S. (2006). Snapshot of hospital quality reporting and pay-for-performance under medicare: Data reveal variations among hospitals in the impact of pay-for-performance programs. *Health Affairs*, 25(1), 148-162.

Journal Article, Research, Tables/Charts

REF ID: 145

Level I: Systematic Reviews

Topic 4: Management

Kim, Y., & Soeken, K. L. (2005). A meta-analysis of the effect of hospital-based case management on hospital length-of-stay and readmission. *Nursing Research*, 54(4), 255-264.

Journal Article, Research, Systematic Review, Tables/Charts

BACKGROUND: Although many hospital-based case management (CM) interventions have been studied, there is little work summarizing the effectiveness of these studies. **OBJECTIVES:** The purpose of this study was to investigate the effect of hospital-based CM compared with usual care on length of hospital stay and readmission rate. **METHOD:** A meta-analytic method was employed to analyze the effect sizes of CM intervention on outcomes. Eligible studies were retrieved using computerized database searches, footnote chasing, and contact with content experts. The authors reviewed the final 12 studies, and the effect size, 95% confidence interval (CI), sensitivity, homogeneity, and publication bias were analyzed. **RESULTS:** The overall average weighted effect size on length of stay (LOS) was 0.094 with a 95% CI of -0.032 to 0.220. The overall odds ratio for readmission was 0.87 with a 95% CI of 0.69 to 1.04. Overall, hospital-based CM interventions were not significantly effective in reducing LOS and readmissions. However, CM for patients with heart failure (effect size of 0.241 with a 95% CI of 0.012 to 0.470) was significantly effective in reducing LOS, although it was not effective for stroke patients (effect size of -0.226 with a 95% CI of -0.542 to 0.089) and frail elders (effect size of 0.126 with a 95% CI of -0.073 to 0.324). Analysis indicated that in this meta-analysis publication bias was unlikely. **DISCUSSION:** The findings of this meta-analysis demonstrate a 6% decrease in readmission rate for patients who received hospital-based CM interventions. Further meta-analytic studies are needed to investigate the effectiveness of CM on other outcomes.

REF ID: 198

QM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Laditka, J. N., Laditka, S. B., & Cornman, C. B. (2005 Jan-Feb). Evaluating hospital care for individuals with alzheimer's disease using inpatient quality indicators. *American Journal of Alzheimer's Disease & Other Dementias*, 20(1), 27-36.

Journal Article

The purpose of this study was to determine whether persons with Alzheimer's disease (AD) were at greater risk for in-hospital mortality than non-AD patients as a result of poor quality of care. The study focused on six common medical conditions that result in hospital mortality. Using 1995 to 2000 data from New York state (n = 7,021,065), analysts compared mortality risk for individuals with and without AD. Among men, adjusted odds of death were greater for those with AD for gastrointestinal (GI) hemorrhage (+52 percent), congestive heart failure (CHF) (+42 percent), hip fracture (+35 percent), and acute myocardial infarction (AMI) (+30 percent) (all p < .0001). Among women, AD did not affect risks for most conditions.

The results of the study show that men with AD are at higher risk of hospital mortality for common medical conditions, which may indicate poor quality of care. Their risk of hospital death was greater than that of men without AD for AMI, CHF, hip fracture, and GI hemorrhage. Their risk was also greater than that of women with AD for CHF, pneumonia, hip fracture, and GI hemorrhage. With the exception of pneumonia, this risk difference notably exceeded the analogous difference between women and men without AD. Hospital staff should be alerted to greater mortality risk for men with AD, as this risk may indicate lower quality of care.

REF ID: 162

Level I: Systematic Reviews

Topic 4.2: Management-Behavior Therapy

Lane, D. A., Chong, A. Y., & Lip, G. Y. H. (2006). Psychological interventions for depression in heart failure. *Cochrane Database of Systematic Reviews*, 1 Systematic Review

Background: Heart failure is a common and growing health problem. Depression is prevalent among these patients and is associated with an increased risk of mortality, in some, but not all, studies. Depression may increase the risk of recurrent cardiac events and death, either through direct pathophysiological mechanisms such as thrombogenesis or ventricular arrhythmias, or through behavioural mechanisms. Depressed patients are less likely to adhere to their medication regimen and modify their lifestyle appropriately, thereby increasing the likelihood of recurrent cardiac events and death. The effects of psychological interventions for depression in terms of reducing depression and improving prognosis in patients with heart failure are unknown. Objectives: To assess the effects of psychological interventions for depression in people with heart failure on depression and quality of life, morbidity, and mortality in these patients. Search strategy: We searched the Cochrane Central Register of Controlled Trials and The Database of Abstracts of Reviews of Effects on (Issue 3, 2003), MEDLINE (1951 to August 2003), PsycINFO (1887 to August 2003), CINAHL (1980 to August 2003) and EMBASE (1980 to August 2003). Searches of reference lists of retrieved papers were also made and expert advice was sought. Abstracts from national and international cardiology, psychology, and psychiatry conferences in 2003 and dissertation abstracts were also searched. All relevant foreign language papers were translated. Selection criteria: RCTs of psychological interventions for depression in adults (18 years or older) with heart failure. The primary outcome was a significant reduction in depression. The secondary outcomes were the acceptability of treatment, quality of life, cardiac morbidity (hospital re-admission for heart failure and non-fatal cardiovascular events), reduction of cardiovascular behavioural risk factors, health economics, and death. Data collection and analysis: Two reviewers independently screened titles and abstracts of potential studies. Two reviewers independently assessed the full papers for inclusion criteria. Further information was sought from the authors where papers contained insufficient information to make a decision about eligibility. Main results: No RCTs of psychological interventions for depression in patients with heart failure were identified. Conclusions: Depression is common among patients with heart failure. Randomised controlled trials of psychological interventions for depression in heart failure patients are needed to investigate the impact of such interventions on

depression, quality of life, behavioural CVD risk factors, cardiac morbidity, health economics and mortality, given the paucity of such trials in this area and the increasing prevalence of heart failure.

REF ID: 156

Level I: Systematic Reviews

Topic 4.6: Management-Other

Lip, G. Y., & Felmeden, D. C. (2004). Antiplatelet agents and anticoagulants for hypertension. [review] [117 refs]. *Cochrane Database of Systematic Reviews*, (3), 003186.

Journal Article. Meta-Analysis. Review

BACKGROUND: Although elevated systemic blood pressure results in high intravascular pressure, the main complications, coronary heart disease (CHD), ischaemic strokes and peripheral vascular disease (PVD), are related to thrombosis rather than haemorrhage. Some complications related to elevated blood pressure, heart failure or atrial fibrillation, are themselves associated with stroke and thromboembolism. It therefore seemed plausible that use of antithrombotic therapy may be particularly useful in preventing thrombosis-related complications of elevated blood pressure. **OBJECTIVES:** To conduct a systematic review of the role of antiplatelet therapy and anticoagulation in patients with blood pressure, including those with elevations in both systolic and diastolic blood pressure, isolated elevations of either systolic or diastolic blood pressure, to address the following hypotheses: (i) antiplatelet agents reduce total deaths and/or major thrombotic events when compared to placebo or other active treatment; and (ii) oral anticoagulants reduce total deaths and/or major thromboembolic events when compared to placebo or other active treatment. **SEARCH STRATEGY:** Reference lists of papers resulting from this search, electronic database searching (MEDLINE, EMBASE, DARE), and abstracts from national and international cardiovascular meetings were studied to identify unpublished studies. Relevant authors of these studies were contacted to obtain further data. **SELECTION CRITERIA:** Randomised controlled trials (RCTs) in patients with elevated blood pressure were included if they were of at least 3 months in duration and compared antithrombotic therapy with control or other active treatment. **DATA COLLECTION AND ANALYSIS:** Data were independently collected and verified by two reviewers. Data from different trials were pooled where appropriate. **MAIN RESULTS:** The ATC meta-analysis of antiplatelet therapy for secondary prevention in patients with elevated blood pressure reported an absolute reduction in vascular events of 4.1% as compared to placebo. Data on the patients with elevated blood pressure from the 29 individual trials included in this meta-analysis was requested but could not be obtained. Three additional trials met the inclusion criteria and are reported on here. Acetylsalicylic acid (ASA) did not reduce stroke or 'all cardiovascular events' compared to placebo in primary prevention patients with elevated blood pressure and no prior cardiovascular disease. Based on one large trial (HOT trial), ASA taken for 5 years reduced myocardial infarction (ARR, 0.5%, NNT 200 for 5 years), increased major haemorrhage (ARI, 0.7%, NNT 154), and did not reduce all cause mortality or cardiovascular mortality. There was no significant difference between ASA and clopidogrel for the composite endpoint of stroke, myocardial infarction or vascular death in one trial (CAPRIE

1996). In two small trials warfarin alone or in combination with ASA did not reduce stroke or coronary events. REVIEWERS' CONCLUSIONS: For primary prevention in patients with elevated blood pressure, anti-platelet therapy with ASA cannot be recommended since the magnitude of benefit, a reduction in myocardial infarction, is negated by a harm of similar magnitude, an increase in major haemorrhage. For secondary prevention in patients with elevated blood pressure (ATC meta-analysis: APTC 1994) antiplatelet therapy is recommended because the magnitude of the absolute benefit is many times greater. Warfarin therapy alone or in combination with aspirin in patients with elevated blood pressure cannot be recommended because of lack of demonstrated benefit. Glycoprotein IIb/IIIa inhibitors as well as ticlopidine and clopidogrel have not been sufficiently evaluated in patients with elevated blood pressure. Further trials of antithrombotic therapy with complete documentation of all benefits and harms are required in patients with elevated blood pressure. [References: 117]

REF ID: 168

Level I: Systematic Reviews

Topic 4.3: Management-Medication

Lip, G. Y. H., & Chung, I. (2006). Antiplatelet agents versus control or anticoagulation for heart failure in sinus rhythm. *Cochrane Database of Systematic Reviews*, 1

Systematic Review

Background: Morbidity and mortality in patients with symptomatic chronic heart failure is high, it predisposes to stroke and thromboembolism which in turn contribute to high mortality in heart failure. Objectives: To determine effect of antiplatelet agents when compared to placebo or anticoagulant therapy on death and/or major thromboembolic events in adults with heart failure who are in sinus rhythm. Search strategy: Systematic search of electronic databases (MEDLINE, EMBASE, DARE). Abstracts from cardiology meetings and reference lists of relevant papers were searched. Authors of studies were contacted for further information. Selection criteria: Randomised parallel group placebo or controlled trials comparing antiplatelet therapy with control or anticoagulation in adults with chronic heart failure in sinus rhythm. Treatment for at least 1 month. To assess any adverse effects cohort study & non-randomised controlled studies were assessed. Orally administered antiplatelet agents e.g. non-steroidal anti-inflammatory agents, ticlopidine, clopidogrel, dipyridamole, aspirin compared with anticoagulant agents e.g. coumarins, warfarin or placebo. Data collection and analysis: Data were extracted by two reviewers independently. No meta-analyses were performed as no data were available from randomised comparisons. The data extracted included data relating to the complexities of the topic area, such as patient characteristics and concomitant treatments, as well as data relating to study eligibility, quality, and outcomes. Non-randomised studies were used to identify side-effects caused by anticoagulants. Main results: One recent pilot RCT compared warfarin, aspirin and no antithrombotic therapy was identified, and one large RCT comparing warfarin and antiplatelet therapy (aspirin, clopidogrel) is awaiting evaluation as no definitive data have yet been published. Three retrospective, non-randomised cohort studies from the V-HeFT, SOLVD and SAVE trials examining the role of ACE inhibitors

have examined the role of aspirin therapy +/- anticoagulant therapy in patients with heart failure and/or left ventricular systolic dysfunction were reviewed for adverse events. The results from these trials were conflicting. Conclusions: At present there is no evidence from long term RCTs to recommend use of aspirin to prevent thromboembolism in patients with heart failure in sinus rhythm. A possible interaction with ACE inhibitors may reduce the efficacy of aspirin, although this evidence is mainly from retrospective analyses of trial cohorts and one pilot RCT. There is also limited evidence from one pilot RCT and preliminary results from one large RCT to indicate superior effects from oral anticoagulation, when compared to aspirin, in patients with heart failure in sinus rhythm, in relation to hospitalisations.

REF ID: 150

Level I: Systematic Reviews

Topic 4.3: Management-Medication

Litaker, J. R., & Chou, J. Y. (2003). Patterns of pharmacologic treatment of congestive heart failure in elderly nursing home residents and related issues: A review of the literature. *Clinical Therapeutics*, 25(7), 1918-1935.

Journal Article, Research, Systematic Review, Tables/Charts

Background: Congestive heart failure (CHF) is a serious clinical syndrome associated with increased morbidity, mortality, and health-related expenditure. In the United States, the incidence and prevalence of CHF have been shown to increase with age, particularly among the elderly (age 65 years). In addition, more elderly persons are living in or will be living in nursing homes. Given these trends, it is important to consider the quality of care, including pharmacologic treatment, received by elderly nursing home residents with a diagnosis of CHF. There is currently a lack of clinical trial data on the pharmacologic treatment of CHF among elderly nursing home residents and, therefore, no standard of care. In lieu of clinical trial data, empiric studies based on nursing home populations may be useful.

Objective: This article reviews empiric studies concerning the pharmacologic treatment of CHF in elderly nursing home residents. Methods: Empiric studies on the use of angiotensin-converting enzyme (ACE) inhibitors, digoxin, and diuretics in elderly nursing home residents with a diagnosis of CHF were identified through searches of MEDLINE, Cochrane Trials, and International Pharmaceutical Abstracts using the terms elderly, nursing home, geriatric, and heart failure. The search was limited to the past 11 years (1991-2002) to identify current patterns of treatment in the population of interest. Additional studies were identified through a manual search of the reference lists of the retrieved articles. Results: Thirteen empiric studies were identified: 9 examined ACE-inhibitor use, 4 digoxin use, and 7 diuretic use. The findings of these studies indicated that ACE inhibitors are underused, are often prescribed at clinically inefficient doses, and are used more often in "young" elderly nursing home residents (age 65-74 years). Among patients who received a prescription for digoxin, many did not have an appropriate indication (eg, no documented atrial fibrillation, normal sinus rhythm). Similarly, diuretics were found to be inappropriately prescribed to elderly nursing home residents for the treatment of CHF. Conclusions: Based on the available empiric studies, elderly nursing home residents with a diagnosis of CHF do not appear to receive adequate treatment with ACE inhibitors, digoxin, or diuretics based on the recommendations of clinical or als

or clinical guidelines. However, the clinical trials and clinical guidelines target the general elderly population and thus may not be applicable to elderly nursing home residents. Future research should explore factors influencing the pharmacologic treatment of CHF in elderly nursing home residents, and trials of new pharmacologic treatments for CHF should include elderly nursing home residents.

REF ID: 237

Level I: Systematic Reviews

Topic 4.1: Management-General

McAlister, F. A., Lawson, F. M., Teo, K. K., & Armstrong, P. W. (2001). A systematic review of randomized trials of disease management programs in heart failure.[see comment]. *American Journal of Medicine*, 110(5), 378-384.

Journal Article. Meta-Analysis

PURPOSE: Disease management programs are often advocated for the care of patients with chronic disease. This systematic review was conducted to determine whether these programs improve outcomes for patients with heart failure.

METHODS: Randomized clinical trials of disease management programs in patients with heart failure were identified by searching Medline 1966 to 1999, Embase 1980 to 1998, Cinahl 1982 to 1999, Sigle 1980 to 1998, the Cochrane Controlled Trial Registry, the Cochrane Effective Practice and Organization of Care Study Registry, and the bibliographies of published studies. We also contacted experts in the field. Studies were selected and data extracted independently by two investigators, and summary risk ratios (RR) and 95% confidence intervals (CI) were calculated using both the random and fixed effects models. **RESULTS:** A total of 11 trials (involving 2,067 patients with heart failure) were identified. Disease management programs were cost saving in 7 of the 8 trials that reported cost data and also appeared to have beneficial effects on prescribing practices. Hospitalizations (RR = 0.87, 95% CI: 0.79 to 0.96) but not all-cause mortality (RR = 0.94, 95% CI: 0.75 to 1.19) were reduced by the programs. However, there were considerable differences in the effects of various interventions on hospitalization rates; specialized follow-up by a multidisciplinary team led to a substantial reduction in the risk of hospitalization (RR = 0.77, 95% CI 0.68 to 0.86, n = 1366), whereas trials employing telephone contact with improved coordination of primary care services failed to find any benefit (RR = 1.15, 95% CI 0.96 to 1.37, n = 646). **CONCLUSION:** Disease management programs for the care of patients with heart failure that involve specialized follow-up by a multidisciplinary team reduce hospitalizations and appear to be cost saving. Data on mortality are inconclusive. Further studies are needed to establish the incremental benefits of the different elements of these programs.

REF ID: 234

Level II: Individual experimental study

Topic 2: Prevention

McCarron, D. A., & Reusser, M. E. (2001). Reducing cardiovascular disease risk with diet. *Obesity Research*, 9(Suppl 4), 335S-340S.

Clinical Trial. Journal Article. Multicenter Study

OBJECTIVE: Past research efforts to determine the influence of the diet on cardiovascular (CV) health have focused on the individual roles of specific dietary components with debatable success. Awareness of the impact and complexity of

nutrient interactions has expanded in recent years to include assessment of dietary patterns as they contribute to lower CV disease risk. **RESEARCH METHODS AND PROCEDURES:** In a series of multicenter studies, we compared a comprehensive, prepared meal plan, formulated to meet recommended intake levels of macro- and micronutrients, with a self-selected diet based on the exchange system. The three studies comprised adult participants with hypertension, hyperlipidemia, and type 2 diabetes (n = 560, 251, and 330, respectively). The first two studies (10 weeks) varied by the amount of contact with study personnel, and the third study assessed long-term effects over 52 weeks. Outcome measures included: blood pressure, lipid and lipoprotein levels, glycemic control, homocysteine, compliance, quality of life, and weight. **RESULTS:** The first study demonstrated significant improvements in all measures, with greater improvements with the prepared meal plan compared with the self-selected diet. The second study, designed to parallel the contact frequency that would occur in a real world clinical setting, also produced significant improvements in multiple CV risk factors. In the long-term study, in addition to sustained improvements in risk factors, significant weight loss was achieved and maintained over the 52 weeks. **DISCUSSION:** These trials demonstrate that regular consumption of a nutritionally complete diet offers multiple, concurrent clinical benefits for reducing CV disease risk and body weight.

REF ID: 231

Level II: Individual experimental study

Topic 4.6: Management-Other

McKelvie, R. S., Teo, K. K., Roberts, R., McCartney, N., Humen, D., & Montague, T. et al. (2002). Effects of exercise training in patients with heart failure: The exercise rehabilitation trial (EXERT).[see comment]. *American Heart Journal*, 144(1), 23-30.

Clinical Trial. Journal Article. Multicenter Study. Randomized Controlled Trial

BACKGROUND: The purpose of this study was to examine the effects of exercise training on functional capacity in patients with heart failure. **METHODS:** One hundred eighty-one patients in New York Heart Association class I to III, with ejection fraction <40% and 6-minute walk distance <500 meters, were recruited into a randomized, controlled, single-blind trial comparing 3 months of supervised training, then 9 months of home-based training with usual care. **RESULTS:** There was a significant increase in 6-minute walk distance at 3 and 12 months but no between-group differences. Incremental peak oxygen uptake increased in the exercise group compared with the control group at 3 months (0.104 +/- 0.026 L/min vs 0.025 +/- 0.023 L/min; P = .026) and 12 months (0.154 +/- 0.074 L/min vs 0.024 +/- 0.027 L/min; P = .081). Compared with the control group, significant increases were observed in the exercise group for arm and leg strength. No significant changes were observed in cardiac function or quality of life. Adherence to exercise was good during supervised training but reduced during home-based training.

CONCLUSIONS: Exercise training improves peak oxygen uptake and strength during supervised training. Over the final 9 months of the study, there was little further improvement, suggesting that some supervision is required for these patients. There were no adverse effects on cardiac function or clinical events.

REF ID: 199

OM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Moscovice, I., Wholey, D. R., Klingner, J., & Knott, A. (2004). Measuring rural hospital quality. *Journal of Rural Health, 20(4), 383-393.*

Journal Article

CONTEXT: Increased interest in the measurement of hospital quality has been stimulated by accrediting bodies, purchaser coalitions, government agencies, and other entities. PURPOSE: This paper examines quality measurement for hospitals in rural settings. We seek to identify rural hospital quality measures that reflect quality in all hospitals and that are sensitive to the rural hospital context. METHODS: We develop a conceptual model for measuring rural hospital quality, with a focus on the special issues posed by the rural hospital context for quality measurement. With the assistance of a panel of rural hospital and hospital quality measurement experts, we review hospital quality measures from national and rural organizations for their fit to rural hospitals. FINDINGS: Based on this analysis, we recommend an initial core set of quality measures relevant for rural hospitals with less than 50 beds. This core set of 20 measures includes 11 core measures from the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) related to community acquired pneumonia, heart failure, and acute myocardial infarction; 1 measure related to infection control; 3 measures related to medication dispensing and teaching; 2 procedure-related measures; 1 financial measure; and 2 other measures related to the use of advance directives and emergency department monitoring of trauma vital signs. CONCLUSION: Based on the special measurement needs posed by the rural hospital context, we suggest avenues for future quality measure development for core rural hospital functions (eg, triage, stabilization, and transfer, and emergency care) not considered in existing quality measurement sets.

REF ID: 139

Level I: Systematic Reviews

Topic 4.3: Management-Medication

Mulrow, C., Lau, J., Cornell, J., & Brand, M. (2006). Pharmacotherapy for hypertension in the elderly. *The Cochrane Library, (1)*

Journal Article, Research, Systematic Review

A substantive amendment to this systematic review was last made on 01 December 1997. Cochrane reviews are regularly checked and updated if necessary. Background: Elderly persons have higher prevalences of hypertension than younger and middle-aged persons and elders with hypertension have a much higher risk of cardiovascular morbidity and mortality than middle-aged persons with hypertension. Despite the higher prevalence and risk in older persons, most early randomized controlled trials evaluating antihypertensive drug therapy were conducted in middle-aged persons. Since 1985, multiple large trials have been published, and several meta-analyses have summarized their results (Davidson 1987, Staessen 1988, Staessen 1990a, Staessen 1990b, Leonetti 1992, Thijs 1992, Celis 1993, MacMahon 1993, Thijs 1994, Pearce 1995). The purpose of this systematic review is to build on these prior published meta-analyses and provide a comprehensive overview of

available trial evidence regarding long-term benefits and harms of antihypertensive drug therapy in elders. Objectives: To quantify the long-term effects of antihypertensive drug therapy on morbidity and mortality in the elderly. To characterize co morbid risk profiles of trial participants. Search strategy: Electronic search of WHO-ISH Collaboration register (August 1997), The Cochrane Library (1997; Issue 1), MEDLINE (1966 to April 1997) and two Japanese databases (1973-1995); references from reviews, trials and 10 previously published meta-analyses; and experts. Selection criteria: Randomized controlled trials of at least one year duration in hypertensive elders (at least 60 years old) assessing antihypertensive drug therapy and providing morbidity and mortality data. Data collection and analysis: At least two independent reviewers abstracted data on morbidity and mortality results and trial characteristics. The following outcomes were assessed: total mortality; coronary heart disease (CHD) mortality; combined CHD morbidity and mortality; cerebrovascular mortality; combined cerebrovascular morbidity and mortality; cardiovascular mortality; combined cardiovascular morbidity and mortality; and drop outs due to side effects of treatment. Main results: Fifteen trials including 21,908 elderly subjects were identified. The average prevalence of cardiovascular risk factors, cardiovascular disease, and competing co morbid diseases was lower among trial participants than the general population of hypertensive elderly persons. Most subjects were 60 to 80 years old. Most trials were conducted in Western, industrialized countries and evaluated diuretic and beta-blocker therapies. Event rates per 1000 participants over approximately 5 years indicated that antihypertensive drug therapy was beneficial. Cardiovascular morbidity and mortality was reduced from 177 to 126 events (95% CI of the difference 31 to 73). Cardiovascular mortality was reduced from 69 to 50 deaths (95% CI of the difference 9 to 31). Total mortality was reduced from 129 to 111 deaths (95% CI of difference 4 to 28). The data from the three trials restricted to persons with isolated systolic hypertension indicated a significant benefit: cardiovascular morbidity and mortality over approximately 5 years was reduced from 157 to 104 events per 1000 participants (95% CI of the difference 12 to 89). Numbers of participants who dropped out of trials secondary to adverse drug effects were often not reported. The four trials that did report this data showed a wide variation in drop out rates ranging from no significant differences between treatment and control groups to as many as one out of four patients dropping out due to side effects of treatment. Authors' conclusions: Randomized controlled trials establish that treating healthy older persons with hypertension is highly efficacious. Benefits of treatment with low dose diuretics or beta-blockers are clear for persons in their 60s to 70s with either diastolic or systolic hypertension. Differential treatment effects based on patient risk factors, pre-existing cardiovascular disease and competing co-morbidities could not be established from the published trial data. [CINAHL Note: The Cochrane Collaboration systematic reviews contain interactive software that allows various calculations in the MetaView.]

REF ID: 203

QM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Nohria, A., Chen, Y. T., Morton, D. J., Walsh, R., Vlasses, P. H., & Krumholz, H. M. (1999 Jun). Quality of care for patients hospitalized with heart failure at academic medical centers.[see comment]. *American Heart Journal*, 137(6), 1028-1034.

Journal Article

BACKGROUND: The purpose of this study was to determine the standard of care provided by academic medical centers for the management of congestive heart failure (CHF). **METHODS AND RESULTS:** The standard of care was estimated by assessing adherence to the treatment guidelines published by the US Agency for Health Care Policy and Research among 522 patients hospitalized at 7 university hospitals with a diagnosis of CHF. Data were abstracted by retrospective chart review. Of the 522 patients analyzed, 435 (83%) had a left ventricular ejection fraction (LVEF) measured or documented. Among these patients, 192 were considered "ideal" candidates for angiotensin-converting enzyme (ACE) inhibitor therapy (ie, with systolic dysfunction [LVEF <40%] and no contraindications to ACE inhibitors). In this cohort of "ideal" candidates, 138 (72%) were receiving ACE inhibitors at hospital discharge, including 60 (44%) who were prescribed doses recommended in large clinical trials. Compliance with patient education guidelines was assessed in all 487 patients who were alive at the time of discharge. Of these patients, 365 (75%) received dietary counseling, 404 (83%) were educated about exercise, 54 (11%) were instructed to follow daily weights, and 468 (96%) were counseled regarding medication compliance. Among the 87 smokers who were alive at time of discharge, 8 (9%) had documented advice to quit smoking.

CONCLUSIONS: This study indicates that academic medical centers performed fairly well on the assessment of LVEF, the prescription of ACE inhibitors at discharge, and on education regarding diet, exercise, and compliance with medications. However, the results suggest opportunities for improvement in ACE inhibitor dosing and patient education regarding the importance of monitoring daily weights and smoking cessation.

REF ID: 192

QM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Pai, C., Finnegan, G. K., & Satwicz, M. J. (2002). The combined effect of public profiling and quality improvement efforts on heart failure management. *Joint Commission Journal on Quality Improvement*, 28(11), 614-624.

Journal Article, Research, Tables/Charts

BACKGROUND: A before-and-after study was conducted to examine **the combined effect of public profiling and quality** improvement activities on management of heart failure (HF) in **the** hospital setting. **METHODS:** Thirty-one hospitals in southeastern Michigan participated in this **profiling and quality** improvement study. One hospital closed after **the** baseline measurement. Two **quality** indicators were developed to evaluate **the** key processes of HF care, and one **profiling** indicator was designed for **public profiling**. **The** baseline results of **the profiling** indicator were **publicly** released. **The** individual hospitals were identified in **the profiling** report by name as "having statistically higher (or lower) rates than

average." Remeasurement results were compared to **the** baseline results by using t-tests for **the** individual hospitals and all 30 hospitals as an aggregate. **RESULTS:** Two-thirds of **the** hospitals improved ejection fraction documentation; **the** aggregate result improved 5.4 percentage points ($p < 0.05$). No change was observed in **the** aggregate measure of prescribing angiotensin-converting enzyme inhibitors (ACEIs) to eligible HF patients at discharge. Hospitals with low baseline rates made improvement in ACEI use at discharge, but those with good baseline performance tended to decline in performance. **There** was a 2.2 percentage point increase ($p < 0.05$) in **the profiling** indicator. **SUMMARY AND CONCLUSIONS:** **There** seemed to be differential impacts of interventions across indicators and hospitals. **Public profiling** may have **the** most positive impact on hospitals with low performance at baseline. Maintaining **the** baseline good practice was a struggle for hospitals with relatively high baseline rates

REF ID: 148

Level I: Systematic Reviews

Topic 4: Management

Topic 2: Prevention

Phillips, C. O., Wright, S. M., Kern, D. E., Singa, R. M., Shepperd, S., & Rubin, H. R. (2004). Comprehensive discharge planning with postdischarge support for older patients with congestive heart failure: A meta-analysis. *JAMA: Journal of the American Medical Association*, 291(11), 1358-1367.

Journal Article, Research, Systematic Review, Tables/Charts

CONTEXT: Comprehensive discharge planning plus postdischarge support may reduce readmission rates for older patients with congestive heart failure (CHF). **OBJECTIVE:** To evaluate the effect of comprehensive discharge planning plus postdischarge support on the rate of readmission in patients with CHF, all-cause mortality, length of stay (LOS), quality of life (QOL), and medical costs. **DATA SOURCES:** We searched MEDLINE (1966 to October 2003), the Cochrane Clinical Trials Register (all years), Social Science Citation Index (1992 to October 2003), and other databases for studies that described such an intervention and evaluated its effect in patients with CHF. Where possible we also contacted lead investigators and experts in the field. **STUDY SELECTION:** We selected English-language publications of randomized clinical trials that described interventions to modify hospital discharge for older patients with CHF (mean age $>$ or $=$ 55 years), delineated clearly defined inpatient and outpatient components, compared efficacy with usual care, and reported readmission as the primary outcome. **DATA EXTRACTION:** Two authors independently reviewed each report, assigned quality scores, and extracted data for primary and secondary outcomes in an unblinded standardized manner. **DATA SYNTHESIS:** Eighteen studies representing data from 8 countries randomized 3304 older inpatients with CHF to comprehensive discharge planning plus postdischarge support or usual care. During a pooled mean observation period of 8 months (range, 3-12 months), fewer intervention patients were readmitted compared with controls (555/1590 vs 741/1714, number needed to treat = 12; relative risk [RR], 0.75; 95% confidence interval [CI], 0.64-0.88). Analysis of studies reporting secondary outcomes found a trend toward lower all-cause mortality for patients assigned to an intervention

compared **with** usual care (RR, 0.87; 95% CI, 0.73-1.03; n = 14 studies), similar initial LOS (mean [SE]: 8.4 [2.5] vs 8.5 [2.2] days, P =.60; n = 10), greater percentage improvement in QOL scores compared **with** baseline scores (25.7% [95% CI, 11.0%-40.4%] vs 13.5% [95% CI, 5.1%-22.0%]; n = 6, P =.01), and similar or lower charges **for** medical care per patient per month **for** the initial hospital stay, administering the intervention, outpatient care, and readmission (-359 dollars [95% CI, -763 dollars to 45 dollars]; n = 4, P =.10 **for** non-US trials and -536 dollars [95% CI, -956 dollars to -115 dollars]; n = 4, P =.03, **for** US trials).

CONCLUSION: Comprehensive discharge planning plus postdischarge support for older patients with CHF significantly reduced readmission rates and may improve health outcomes such as survival and QOL **without** increasing costs.

REF ID: 147

Level I: Systematic Reviews

Topic 4: Management

Piepoli MF, Davos C, Francis DP, Coats AJ., & ExTraMATCH Collaborative. (2004). Exercise training meta-analysis of trials in patients with chronic heart failure (ExTraMATCH). *BMJ*, 328(7433), 189-192.

Journal Article, Research, Systematic Review, Tables/Charts

OBJECTIVE: To determine the effect of **exercise training** on survival in **patients with heart failure** due to left ventricular systolic dysfunction. **DESIGN:** Collaborative **meta-analysis**. Inclusion criteria Randomised parallel group controlled **trials** of **exercise training** for at least eight weeks **with** individual patient data on survival for at least three months. Studies reviewed Nine datasets, totalling 801 **patients**: 395 received **exercise training** and 406 were controls. **MAIN OUTCOME MEASURE:** Death from all causes. **RESULTS:** During a mean (SD) follow up of 705 (729) days there were 88 (22%) deaths in the **exercise** arm and 105 (26%) in the control arm. **Exercise training** significantly reduced mortality (hazard ratio 0.65, 95% confidence interval, 0.46 to 0.92; log rank chi(2) = 5.9; P = 0.015). The secondary end point of death or admission to hospital was also reduced (0.72, 0.56 to 0.93; log rank chi(2) = 6.4; P = 0.011). No statistically significant subgroup specific treatment effect was observed. **CONCLUSION: Meta-analysis** of randomised **trials** to date gives no evidence that properly supervised medical **training** programmes for **patients with heart failure** might be dangerous, and indeed there is clear evidence of an overall reduction in mortality. Further research should focus on optimising **exercise** programmes and identifying appropriate patient groups to target.

REF ID: 138

Level I: Systematic Reviews

Topic 4.3: Management-Medication

Quan, A., Kerlikowske, K., Gueyffier, F., Boissel, J. P., & INDANA investigators. (2006). Pharmacotherapy for hypertension in women of different races. *The Cochrane Library*, (1)

Journal Article, Research, Systematic Review

A substantive amendment to this systematic review was last made on 03 December 1999. Cochrane reviews are regularly checked and updated if necessary.

Background: Although hypertension treatment in women is recommended to

decrease the risk of cardiovascular disease (Wenger 1993, Kaplan 1995, Kuhn 1993, Hayes 1998, JNCVI,1997), the evidence for treatment benefit is primarily based on combined results for men and women (Collins 1990, Insua 1994, Mulrow 1994, Psaty 1997). Objectives: To assess whether the relative and absolute benefit of hypertension treatment in women varies with age or race. Search strategy: Literature search of studies from 1966 to 1998 using MEDLINE, reviews, and consultation with experts. Selection criteria: Studies were eligible if they were randomized controlled trials of pharmacological treatment of primary hypertension, with cardiovascular morbidity and mortality outcomes, and with over one hundred women enrolled. Data collection and analysis: The pooled population included 23,000 women. Relative risks were combined for each endpoint to form summary risk ratios (RR) using meta-analytic techniques based on a random-effects model. Summary RR's were converted to numbers needed to treat (NNT). Data were dichotomized by age to approximate menopausal status (30 to 54 years, and 55 years and older), and by race (white and African American). Main results: In women ages 55 years or older (90% white), hypertension treatment results in a 38% risk reduction in fatal and nonfatal cerebrovascular events (95% confidence interval (CI) 27-47%, 5 year NNT 78), a 25% reduction in fatal and nonfatal cardiovascular events (95% CI 17-33%, 5 year NNT 58), and a 17% reduction in cardiovascular mortality (95% CI 3-29%, 5 year NNT 282). In women ages 30 to 54 years (79% white), hypertension treatment results in a 41% risk reduction in fatal and nonfatal cerebrovascular events (95% CI 8-63%, 5 year NNT 264), and a 27% risk reduction in fatal and nonfatal cardiovascular events (95% CI 4-44%, 5 year NNT 259). Hypertension treatment in African American women (mean age 52 years) reduced the risk of fatal and nonfatal cerebrovascular events by 53% (95% CI 29-69%, 5 year NNT 39), fatal and nonfatal cardiovascular events by 45% (95% CI 18-63%, 5 year NNT 21), fatal and nonfatal coronary events by 33% (95% CI 6-52%, 5 year NNT 48), and all cause mortality by 34% (95% CI 14-49%, 5 year NNT 32). Analyses in white women 30 to 54 years old did not show any statistically significant treatment benefit or harm. Authors' conclusions: Hypertension treatment lowers the relative and absolute risk of cardiovascular morbidity and mortality in women ages 55 years and older, and in African American women of all ages. A greater effort should be made to increase awareness and treatment in these groups of women. Although relative risk reductions for cerebrovascular and cardiovascular events are similar for younger and older women, the NNT of younger women is at least 4 times higher. Decisions for treatment of hypertension in younger white women should be influenced by the individual patient's absolute risk of cardiovascular disease. [CINAHL Note: The Cochrane Collaboration systematic reviews contain interactive software that allows various calculations in the MetaView.]

REF ID: 164

Level I: Systematic Reviews

Topic 4.6: Management-Other

Rees, K., Taylor, R. S., Singh, S., Coats, A. J. S., & Ebrahim, S. (2006). Exercise based rehabilitation for heart failure. *Cochrane Database of Systematic Reviews*, 1

Systematic Review

Background: The prevalence of chronic heart failure is increasing, and increases with increasing age. Major symptoms include breathlessness and restricted activities of daily living due to reduced functional capacity, which in turn affects quality of life. Exercise training has been shown to be effective in patients with coronary heart disease and has been proposed as an intervention to improve exercise tolerance in patients with heart failure. Objectives: To determine the effectiveness of exercise based interventions compared with usual medical care on the mortality, morbidity, exercise capacity and health related quality of life, of patients with heart failure. Search strategy: We searched the Cochrane Controlled Trials Register (Issue 2, 2001), MEDLINE (2000 to March 2001), EMBASE (1998 to March 2001), CINAHL (1984 to March 2001) and reference lists of articles. We also sought advice from experts. Selection criteria: RCTs of exercise based interventions. The comparison group was usual medical care as defined by the study, or placebo. Adults of all ages with chronic heart failure. Only those studies with criteria for diagnosis of heart failure (based on clinical findings or objective indices) have been included. Data collection and analysis: Studies were selected, and data were abstracted, independently by two reviewers. Authors were contacted where possible to obtain missing information. Main results: Twenty-nine studies met the inclusion criteria, with 1126 patients randomised. The majority of studies included both patients with primary and secondary heart failure, NYHA class II or III. Only one study specifically examined the effect of exercise training on mortality and morbidity. Exercise training significantly increased VO(subscript 2) max by (WMD random effects model) 2.16 ml/kg/min (95% CI 2.82 to 1.49), exercise duration increased by 2.38 minutes (95% CI 2.85 to 1.9), work capacity by 15.1 Watts (95% CI 17.7 to 12.6) and distance on the six minute walk by 40.9 metres (95% CI 64.7 to 17.1). Improvements in VO(subscript 2) max were greater for training programmes of greater intensity and duration. HRQoL improved in the seven of nine trials that measured this outcome. Conclusions: Exercise training improves exercise capacity and quality of life in patients mild to moderate heart failure in the short term. One study found beneficial effects of exercise on cardiac mortality and hospital readmissions over 3 years of follow-up, the remaining included studies did not aim to measure clinical outcomes and were of short duration. The findings of the review are based on small-scale trials in patients who are unrepresentative of the total population of patients with heart failure. Other groups (more severe patients, the elderly, women) may also benefit. Large-scale pragmatic trials of exercise training of longer duration, recruiting a wider spectrum of patients are needed to address these issues.

REF ID: 201

QM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Rhoades, D. A., & Buchwald, D. (2003 Jun). Hypertension in older urban native-american primary care patients. *Journal of the American Geriatrics Society*, 51(6), 774-781.

Journal Article

OBJECTIVES: To examine hypertension and its management in a population of

older urban American Indians and Alaska Natives (AI/ANs). DESIGN: Retrospective cohort study using medical record review. SETTING: Urban health clinic serving predominantly AI/ANs in the Pacific Northwest. PARTICIPANTS: Five hundred twenty-four AI/ANs aged 50 and older seen between 1994 and 1995. MEASUREMENTS: Frequency of diagnosed hypertension, undiagnosed hypertension, comorbid conditions, hypertension treatment, control, and quality of care. RESULTS: The prevalence of diagnosed hypertension was 38%, and the prevalence of possible undiagnosed hypertension was 23%. Patients with diagnosed hypertension were more likely to be obese (age-adjusted odds ratio (OR) = 3.5), have diabetes mellitus (DM) (OR = 2.2), depression (OR = 1.7), heart disease (OR = 3.8), or renal disease (OR = 5.6) than patients without hypertension. Undiagnosed hypertension was inversely associated with number of health problems (OR = 0.8). Eighty-one percent of diagnosed patients were treated pharmacologically, but no factors associated with nontreatment were identified. Diuretic and beta-blocker usage was low. Patients with DM used angiotensin-converting enzyme inhibitors more frequently than patients without DM (OR = 2.4). Blood pressure was well controlled in 37%, with men being less well controlled than women (OR = 0.5). Serum cholesterol, creatinine, and retinal screening were performed more often than urinalyses or electrocardiograms. Lifestyle-modification counseling was uncommon. Number of health problems was the most common factor associated with screening tests for end-organ disease. CONCLUSION: Few studies have examined the care of older urban AI/ANs. Improvements are needed in adherence to recommendations for the detection, management, and monitoring of hypertension and its complications in older urban AI/ANs.

REF ID: 188

QM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Romano, P. S. (2005). Improving the quality of hospital care in america. *New England Journal of Medicine*, 353(3), 302-304.

Journal Article, Commentary, Editorial

REF ID: 152

Level I: Systematic Reviews

Topic 4: Management

Rutledge, D. N., Donaldson, N. E., & Pravikoff, D. S. (2001). Patient education in disease and symptom management: Congestive heart failure. *Online Journal of Clinical Innovations*, 4(2), 1-52.

Journal Article, Research, Systematic Review, Tables/Charts

Disease management focuses on providing well-integrated high quality care that is intended to maximize health status and minimize costs across the continuum of care settings. Patient education is a core component of disease management programs and involves education about the disease process as well as ways to manage the disease. Evidence-based recommendations for improving the quality and outcomes of adult patient education in disease and symptom management are synthesized in this report concerning patients with congestive heart failure.

REF ID: 194

QM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Saliba, D., Solomon, D., Rubenstein, L., Young, R., Schnelle, J., & Roth, C. et al. (2004). Quality indicators for the management of medical conditions in nursing home residents. *Journal of the American Medical Directors Association*, 5(5), 297-309.

Journal Article, Research, Tables/Charts

PURPOSE: The purpose of this study was to develop a set of specific care processes associated with better outcomes for general medical conditions identified as quality improvement targets for institutionalized vulnerable elders. **METHODS:** A national panel of nursing home experts used a modified-Delphi process to rate the validity (process linked to improved outcomes) and feasibility (of implementation and measurement) of candidate measures for depression, diabetes, hearing impairment, heart failure, hypertension, ischemic heart disease, osteoarthritis, osteoporosis, pneumonia, stroke, and vision impairment. Each quality indicator was written as an "if" statement, describing persons to whom the quality indicator applied followed by a "then" statement identifying the care process to be provided. A separate clinical committee reviewed the resulting set of indicators. **RESULTS:** One hundred fourteen quality indicators were identified across the 11 medical conditions. The quality indicators capture a broad range of medical care addressing assessment, management, and follow up. Fifty-five indicators (48%) were identical to quality measures for community-dwelling vulnerable elders. A limited number were rated as questionably feasible to implement or measure (6 and 2, respectively). Thirty-eight (33%) would not be applied to measures of care quality for persons with advanced dementia or poor prognosis. **CONCLUSIONS:** Explicit care processes linked to improved nursing home outcomes for general medical conditions can be identified. Most of these care processes can be measured by medical records or interview. Nursing home quality measures for medical conditions must account for exclusions related to poor prognosis and advanced dementia.

REF ID: 202

QM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Sennett, C. (2000 Apr). Implementing the new HEDIS hypertension performance measure. *Managed Care*, 9(4 Suppl), 2-17.

Journal Article

There is a problem with blood pressure control in the United States--a problem with significant implications for the health and welfare of the populace. This problem is bigger than managed care, but managed care organizations have both unique opportunities and unique obligations to address it. NCQA has responded to this problem, and to the opportunity for better care implicit in it, by introducing into HEDIS a measure that focuses on hypertension control. This measure will add pressure to health plans to address the problem of hypertension control, but it also will create the opportunity for positive recognition for those plans that succeed. The

HEDIS hypertension measure is well grounded in both the science of medicine and the science of measurement. But HEDIS measurement alone will not create change. To effect change will require analysis of the problems that limit the delivery of effective care to patients with hypertension. It will require measurement of the success of the key processes of care upon which effective care depends. And it will require response--rational, focused, and operationally effective. These, in turn, will challenge key managers in health plans. Medical directors will have to influence provider behavior. Pharmacy directors will have to leverage pharmacy resources to support efforts to change provider and enrollee behaviors. And QA directors will have to manage a challenging set of measurement activities, from which plans' efforts to improve will be launched. The next few years will not be easy--demands for improvement increase annually, and resources are every year more scarce. Yet the goal is worth the struggle--to transform an industry that the public perceives to be interested in limiting care into one that the public turns to for assurance that care represents high value. Responding effectively to the HEDIS hypertension measure creates a unique opportunity for managed care--to demonstrate to the public that managed care is leading national efforts to improve quality for 50 million Americans needlessly at risk for heart disease and stroke, and in doing so, to demonstrate its commitment to health maintenance--the very foundation of managed care.

REF ID: 143

Level I: Systematic Reviews

Topic 2: Prevention

Straus, S. E., Majumdar, S. R., & McAlister, F. A. (2002). Scientific review and clinical application. new evidence for stroke prevention: Scientific review.

JAMA: Journal of the American Medical Association, 288(11), 1388-1395.

Journal Article, Research, Systematic Review, Tables/Charts

CONTEXT: Stroke is a major cause of morbidity and mortality, and the application of **evidence for stroke prevention** varies considerably. **OBJECTIVE:** To **review** the most recent, high-quality **evidence for** primary and secondary **stroke prevention**. **DATA SOURCES AND STUDY SELECTION:** Searches of MEDLINE, The Cochrane Library, and the ACP Journal Club were performed to identify English-language articles published from 1998 to 2001 that focused on primary and secondary **stroke prevention**. The references of each retrieved article were scanned, and experts in the field were contacted to identify additional relevant articles. **DATA EXTRACTION:** Each of the articles was appraised, and its quality was graded with levels of **evidence** based on specific **scientific** methods that affect a study's validity. **DATA SYNTHESIS:** For primary **prevention of stroke**, adequate blood pressure reduction, and treatment of hyperlipidemia, use of antithrombotic therapy in patients with atrial fibrillation and of antiplatelet therapy in patients with myocardial infarction are effective and supported by **evidence** from several randomized trials. Effective strategies **for** the secondary **prevention of stroke** include treatment of hypertension and hyperlipidemia, antithrombotic therapy **for** patients with atrial fibrillation, antiplatelet therapy, and carotid endarterectomy in patients with severe carotid artery stenosis. **CONCLUSIONS:** Stroke is a major public health concern, and a significant body of **evidence** supports many primary and secondary **prevention** strategies.

REF ID: 153

Level I: Systematic Reviews

Topic 4.3: Management-Medication

Strippoli, G. F., Craig, M., & Craig, J. C. (2005). Antihypertensive agents for preventing diabetic kidney disease. [review] [50 refs]. *Cochrane Database of Systematic Reviews*, (4), 004136.

Journal Article. Meta-Analysis. Review

BACKGROUND: Twenty to sixty percent of diabetic patients are affected by hypertension and antihypertensive agents are used to treat this condition. These agents are also used to prevent the onset of kidney disease both in normotensive and hypertensive diabetics. **OBJECTIVES:** To evaluate the comparative effects of antihypertensive agents in patients with diabetes and normoalbuminuria. **SEARCH STRATEGY:** MEDLINE, EMBASE, the Cochrane Central Register of Controlled Trials, conference proceedings, and contact with investigators were used to identify relevant trials. **SELECTION CRITERIA:** Randomised controlled trials (RCTs) comparing any antihypertensive agent with placebo or another agent in hypertensive or normotensive patients with diabetes and no kidney disease (albumin excretion rate < 30 mg/d) were included. **DATA COLLECTION AND ANALYSIS:** Two investigators independently extracted data on renal outcomes and other patient relevant outcomes (all-cause mortality, serious cardiovascular events), and assessed quality of trials. Analysis was by a random effects model and results expressed as relative risk (RR) and 95% confidence intervals (CI). **MAIN RESULTS:** Sixteen trials (7603 patients) were identified, six of angiotensin converting enzyme inhibitors (ACEi) versus placebo, six of ACEi versus calcium channel blockers (CCBs), one of ACEi versus CCBs or combined ACEi and CCBs and three of ACEi versus other agents. Compared to placebo, ACEi significantly reduced the development of microalbuminuria (six trials, 3840 patients: RR 0.60, 95% CI 0.43 to 0.84) but not doubling of creatinine (three trials, 2683 patients: RR 0.81, 95% CI 0.24 to 2.71) or all-cause mortality (four trials, 3284 patients: RR 0.81, 95% CI 0.64 to 1.03). Compared to CCBs, ACEi significantly reduced progression to microalbuminuria (four trials, 1210 patients: RR 0.58, 95% CI 0.40 to 0.84). **AUTHORS' CONCLUSIONS:** A significant reduction in the risk of developing microalbuminuria in normoalbuminuric patients with diabetes has been demonstrated for ACEi only. It appears that the effect of ACEi is independent of baseline blood pressure, renal function and type of diabetes, but data is too sparse to be confident that these are not important effect modifiers and an individual patient data meta-analysis is required. [References: 50]

REF ID: 167

Level I: Systematic Reviews

Topic 4.1: Management-General

Taylor, S., Bestall, J., Cotter, S., Falshaw, M., Hood, S., & Parsons, S. et al. (2006). Clinical service organisation for heart failure. *Cochrane Database of Systematic Reviews*, 1

Systematic Review

Background: Chronic heart failure (CHF) is a serious, common condition associated with frequent hospitalisation. Several different disease management interventions

(clinical service organisation interventions) for patients with CHF have been proposed. Objectives: To assess the effectiveness of disease management interventions for patients with CHF. Search strategy: We searched: Cochrane CENTRAL Register of Controlled Trials (to June 2003); MEDLINE (January 1966 to July 2003); EMBASE (January 1980 to July 2003); CINAHL (January 1982 to July 2003); AMED (January 1985 to July 2003); Science Citation Index Expanded (searched January 1981 to March 2001); SIGLE (January 1980 to July 2003); DARE (July 2003); National Research Register (July 2003); NHS Economic Evaluations Database (March 2001); reference lists of articles and asked experts in the field. Selection criteria: Randomised controlled trials comparing disease management interventions specifically directed at patients with CHF to usual care. Data collection and analysis: At least two reviewers independently extracted data information and assessed study quality. Study authors were contacted for further information where necessary. Main results: Sixteen trials involving 1,627 people were included. We classified the interventions into three models: multidisciplinary interventions (a holistic approach bridging the gap between hospital admission and discharge home delivered by a team); case management interventions (intense monitoring of patients following discharge often involving telephone follow up and home visits); and clinic interventions (follow up in a CHF clinic). There was considerable overlap within these categories, however the components, intensity and duration of the interventions varied. Case management interventions tended to be associated with reduced all cause mortality but these findings were not statistically significant (odds ratio 0.86, 95% confidence interval 0.67 to 1.10, P = 0.23), although the evidence was stronger when analysis was limited to the better quality studies (odds ratio 0.68, 95% confidence interval 0.46 to 0.98, P = 0.04). There was weak evidence that case management interventions may be associated with a reduction in admissions for heart failure. It is unclear what the effective components of the case management interventions are. The single RCT of a multidisciplinary intervention showed reduced heart-failure related re-admissions in the short term. At present there is little available evidence to support clinic based interventions. Conclusions: The data from this review are insufficient for forming recommendations. Further research should include adequately powered, multi-centre studies. Future studies should also investigate the effect of interventions on patients' and carers' quality of life, their satisfaction with the interventions and cost effectiveness.

REF ID: 227

Level I: Systematic Reviews

Topic 4.3: Management-Medication

Turnbull, F., & Blood Pressure Lowering Treatment Trialists', Collaboration. (2003). Effects of different blood-pressure-lowering regimens on major cardiovascular events: Results of prospectively-designed overviews of randomised trials.[see comment]. *Lancet*, 362(9395), 1527-1535.

Journal Article. Meta-Analysis

BACKGROUND: The benefits of reducing blood pressure on the risks of major cardiovascular disease are well established, but uncertainty remains about the comparative effects of different blood-pressure-lowering regimens. We aimed to estimate effects of strategies based on different drug classes (angiotensin-converting-

enzyme [ACE] inhibitors, calcium antagonists, angiotensin-receptor blockers [ARBs], and diuretics or beta blockers) or those targeting different blood pressure goals, on the risks of major cardiovascular events and death. **METHODS:** We did seven sets of prospectively-designed overviews with data from 29 randomised trials (n=162341). The trial eligibility criteria, primary outcomes, and main hypotheses were specified before the result of any contributing trial was known. **FINDINGS:** In placebo-controlled trials the relative risks of total major cardiovascular events were reduced by regimens based on ACE inhibitors (22%; 95% CI 17-27) or calcium antagonists (18%; 5-29). Greater risk reductions were produced by regimens that targeted lower blood pressure goals (15%; 5-24). ARB-based regimens reduced the risks of total major cardiovascular events (10%; 4-17) compared with control regimens. There were no significant differences in total major cardiovascular events between regimens based on ACE inhibitors, calcium antagonists, or diuretics or beta blockers, although ACE-inhibitor-based regimens reduced blood pressure less. There was evidence of some differences between active regimens in their effects on cause-specific outcomes. For every outcome other than heart failure, the difference between randomised groups in achieved blood pressure reduction was directly related to the observed difference in risk. **INTERPRETATION:** Treatment with any commonly-used regimen reduces the risk of total major cardiovascular events, and larger reductions in blood pressure produce larger reductions in risk.

REF ID: 233

Level I: Systematic Reviews

Topic 4.6: Management-Other

Whelton, S. P., Chin, A., Xin, X., & He, J. (2002). Effect of aerobic exercise on blood pressure: A meta-analysis of randomized, controlled trials.[see comment][summary for patients in ann intern med. 2002 apr 2;136(7):I16; PMID: 11926806]. *Annals of Internal Medicine*, 136(7), 493-503.

Journal Article. Meta-Analysis

PURPOSE: Physical activity has been associated with reduced blood pressure in observational epidemiologic studies and individual clinical trials. This meta-analysis of randomized, controlled trials was conducted to determine the effect of aerobic exercise on blood pressure. **DATA SOURCES:** English-language articles published before September 2001. **STUDY SELECTION:** 54 randomized, controlled trials (2419 participants) whose intervention and control groups differed only in aerobic exercise. **DATA EXTRACTION:** Using a standardized protocol and data extraction form, three of the investigators independently abstracted data on study design, sample size, participant characteristics, type of intervention, follow-up duration, and treatment outcomes. **DATA SYNTHESIS:** In a random-effects model, data from each trial were pooled and weighted by the inverse of the total variance. Aerobic exercise was associated with a significant reduction in mean systolic and diastolic blood pressure (-3.84 mm Hg [95% CI, -4.97 to -2.72 mm Hg] and -2.58 mm Hg [CI, -3.35 to -1.81 mm Hg], respectively). A reduction in blood pressure was associated with aerobic exercise in hypertensive participants and normotensive participants and in overweight participants and normal-weight participants. **CONCLUSIONS:** Aerobic exercise reduces blood pressure in both hypertensive and normotensive persons. An increase in aerobic physical activity should be considered

an important component of lifestyle modification for prevention and treatment of high blood pressure.

REF ID: 190

QM: Quality Measures [Quality indicators (Medline)/Clinical indicators (CINAHL)]

Topic 5: Evaluation/Follow-up

Williams, S. C., Schmaltz, S. P., Morton, D. J., Koss, R. G., & Loeb, J. M. (2005). Quality of care in U.S. hospitals as reflected by standardized measures, 2002-2004. *New England Journal of Medicine*, 353(3), 255-264.

Journal Article, Research, Tables/Charts

BACKGROUND: In July 2002, the Joint Commission on Accreditation of Healthcare Organizations implemented standardized performance measures that were designed to track the performance of accredited **hospitals** and encourage improvement in the quality of health care. **METHODS:** We examined **hospitals'** performance on 18 standardized indicators of the quality of care for acute myocardial infarction, heart failure, and pneumonia. One measure assessed a clinical outcome (death in the hospital after acute myocardial infarction), and the other 17 measures assessed processes of care. Data were collected over a two-year period in more than 3000 accredited **hospitals**. All participating **hospitals** received quarterly feedback in the form of comparative reports throughout the study. **RESULTS:** Descriptive analysis revealed a significant improvement ($P < 0.01$) in the performance of U.S. **hospitals** on 15 of 18 measures, and no measure showed a significant deterioration. The magnitude of improvement ranged from 3 percent to 33 percent during the eight quarters studied. For 16 of the 17 process-of-care measures, **hospitals** with a low level of performance at baseline had greater improvements over the subsequent two years than **hospitals** with a high level of performance at baseline. **CONCLUSIONS:** Over a two-year period, we observed consistent improvement in measures reflecting the process of care for acute myocardial infarction, heart failure, and pneumonia. Both quantitative and qualitative research are needed to explore the reasons for these improvements.

REF ID: 149

Level I: Systematic Reviews

Topic 4.1: Management-General

Windham, B. G., Bennett, R. G., & Gottlieb, S. (2003). Care management interventions for older patients with congestive heart failure. *American Journal of Managed Care*, 9(6), 447-461.

Journal Article, CEU, Exam Questions, Research, Systematic Review, Tables/Charts

OBJECTIVES: To identify **interventions** and outcome measures that should be included when designing **care management** programs for **older patients with congestive heart failure** (CHF) and assessing the overall effectiveness of these programs. **STUDY DESIGN:** Structured literature review and assessment. **METHODS:** A systematic literature search was conducted to identify articles that described **interventions** and outcome measures designed to improve **care for older patients with CHF**. Resultant studies were classified according to design, and

interventions and outcome measures were categorized. Finally, the data were analyzed to identify **care management** strategies and outcome measures associated **with** effective studies (defined as those that achieved improvement in more than half of the important outcome measures). **RESULTS:** Thirty-two studies were identified. Most of the effective programs employed both a physician and a nurse; 12 employed a case manager. Hospital utilization was typically reduced by 30% to 80% in studies that measured this factor, although utilization increased in 2 studies. Only 6 studies showed significant reductions in costs. Fifteen of the studies were categorized as effective; 15 showed trends toward improvement; and 2 studies in which intervention subjects worsened appeared to have design flaws and subject selection biases. **CONCLUSION: Care management interventions** can be clinically effective, although cost effectiveness remains to be established. Common elements in effective **care management** programs included the teaming of a physician **with** a nurse or **care** manager; frequent patient monitoring **for** CHF decompensation; and patient education to improve self-assessment skills. Most ineffective programs showed deficiencies in nurse training, study design, or patient selection.

REF ID: 228

Level II: Individual experimental study

Topic 4.3: Management-Medication

Wing, L. M., Reid, C. M., Ryan, P., Beilin, L. J., Brown, M. A., & Jennings, G. L. et al. (2003). A comparison of outcomes with angiotensin-converting--enzyme inhibitors and diuretics for hypertension in the elderly.[see comment]. *New England Journal of Medicine*, 348(7), 583-592.

Clinical Trial. Journal Article. Multicenter Study. Randomized Controlled Trial

BACKGROUND: Treatment of hypertension with diuretics, beta-blockers, or both leads to improved outcomes. It has been postulated that agents that inhibit the renin-angiotensin system confer benefit beyond the reduction of blood pressure alone. We compared the outcomes in older subjects with hypertension who were treated with angiotensin-converting-enzyme (ACE) inhibitors with the outcomes in those treated with diuretic agents. **METHODS:** We conducted a prospective, randomized, open-label study with blinded assessment of end points in 6083 subjects with hypertension who were 65 to 84 years of age and received health care at 1594 family practices. Subjects were followed for a median of 4.1 years, and the total numbers of cardiovascular events in the two treatment groups were compared with the use of multivariate proportional-hazards models. **RESULTS:** At base line, the treatment groups were well matched in terms of age, sex, and blood pressure. By the end of the study, blood pressure had decreased to a similar extent in both groups (a decrease of 26/12 mm Hg). There were 695 cardiovascular events or deaths from any cause in the ACE-inhibitor group (56.1 per 1000 patient-years) and 736 cardiovascular events or deaths from any cause in the diuretic group (59.8 per 1000 patient-years; the hazard ratio for a cardiovascular event or death with ACE-inhibitor treatment was 0.89 [95 percent confidence interval, 0.79 to 1.00]; P=0.05). Among male subjects, the hazard ratio was 0.83 (95 percent confidence interval, 0.71 to 0.97; P=0.02); among female subjects, the hazard ratio was 1.00 (95 percent confidence interval, 0.83 to 1.21; P=0.98); the P value for the interaction between sex and treatment-

group assignment was 0.15. The rates of nonfatal cardiovascular events and myocardial infarctions decreased with ACE-inhibitor treatment, whereas a similar number of strokes occurred in each group (although there were more fatal strokes in the ACE-inhibitor group). CONCLUSIONS: Initiation of antihypertensive treatment involving ACE inhibitors in older subjects, particularly men, appears to lead to better outcomes than treatment with diuretic agents, despite similar reductions of blood pressure. Copyright 2003 Massachusetts Medical Society