cardial infarction, chest pain greater than 20 minutes and irregular specifications of EKG. The outcome measured was reduction in mortality at a 30-day follow-up. The study was based on a societal perspective, hence the cost measure included both direct costs such as cost of hospitalizations, drug acquisition, follow-up hospitalizations and physicians' fees, and indirect costs. We calculated the effectiveness measure, using life expectancy, as number of quality-adjusted life-years (QALYs) saved.
RESULTS: The expected total costs of t-PA treatment were $16,885 and with streptokinase, the expected total costs were $14,472. The number of QALYs saved for each therapy were 12.379 years for t-PA and 12.16 years for streptokinase. The ICE ratio was calculated to be $11,171 per QALY.
CONCLUSION: Since the ICE ratio of $11,171/QALY is less than the most popular cut-off ratio of $40,000/QALY, we concluded that t-PA is more cost-effective than streptokinase in the treatment of acute myocardial infarctions.

PCVD4

AN ECONOMIC MODEL OF HYPERTENSION IN ONTARIO

Bentkover JD[1], Stewart EJ[1], Magar R[2], Saffar J-M[3], Greene EM[4], Klawansky S[5], Parison D[6]
[1]Innovative Health Solutions (IHS), Brookline, MA, USA; [2]Health Economics Research, Secaucus, NJ, USA; [3]A.T. Kearney, Boston, MA, USA; [4]KPMG LLP, Dublin, Ireland; [5]Consultant to IHS, Boston, MA, USA; [6]Formerly of Novartis Pharmaceuticals Corporation, Montreal, Quebec, Canada

OBJECTIVE: To examine the costs and outcomes associated with the use of valsartan, an angiotensin II receptor blocker, compared to six different anti-hypertensive medications as second-line treatment for mild to moderate hypertension over 12 months.
METHODS: A decision analytic model was developed to evaluate the costs and outcomes associated with initiating treatment with seven different anti-hypertensive medications. A combination of meta-analysis and predictive logistic regression analysis was used to model effectiveness defined as the proportion of patients responding to anti-hypertensive treatment (response was defined as a reduction of diastolic blood pressure to below 90 mmHg or a reduction of greater than 10 mmHg). The meta-analysis was performed on an intent-to-treat basis. Two regression analyses were used, one to impute a response rate for those studies where only change in blood pressure was reported and a second to determine a dose-response relationship for each comparator. Costs for drugs, laboratory tests, and physician visits were obtained from publicly available Ontario sources. The analysis determined the cost per successful responder at 12 months for each initial comparator.
RESULTS: The analysis demonstrated that treatment patterns associated with each medication, particularly laboratory tests, played an important role in the overall cost and cost-effectiveness of each therapy as opposed to simply the drug acquisition cost.
CONCLUSIONS: At least two drugs from each class, angiotensin receptor blocker, angiotensin converting enzyme inhibitor, and calcium channel blocker, were evaluated and no evidence of class effects was seen.

PCVD5

DELPHI PANEL SURVEY ON CURRENT HYPERTENSION TREATMENT PATTERNS

Richter A[1], Dombeck MP[1], Ostrowski C[2]
[1]Research Triangle Institute, Research Triangle Park, NC, USA; [2]Clinical Consultant, Durham, NC, USA

OBJECTIVE: Determine current clinical practice in the treatment of mild-to-moderate uncomplicated hypertension.
METHODS: Delphi panel survey of general practitioners and cardiologists in the United States. First round: 11 physician responders. Second round: 10 of 11 physicians responded. Consensus reached in the second round. Questions addressed the status quo, JNC-VI guidelines, initial therapy, and second-line therapy.
RESULTS: Diuretics and ACE inhibitors are more frequently prescribed than other drug classes. HCTZ is the most frequently used diuretic, atenolol and metoprolol are the most frequently used beta-blockers. A variety of drugs are prescribed from ACE inhibitors, calcium channel blockers and angiotensin-II inhibitors. When a patient is given combination therapy, the second agent is typically a diuretic. Physicians generally agreed with the JNC-VI guidelines, except that: 1) more drugs should be permissible as first-line therapy (seven physicians regularly consider classes other than diuretics or beta-blockers as initial therapy), and 2) comorbidities are a major factor in drug choice and the guidelines do not adequately address this. Follow-up after initiating drug therapy typically occurs at 1 month. New therapies will generally be titrated upward once or twice (depending on the drug) before the drug is discontinued due to lack of efficacy. Once a patient's hypertension is controlled, monitoring occurs every 3 to 4 months. It is extremely rare for a patient to be unresponsive to all five drug classes. Results from a series of case studies in which physicians were asked to select the class of medication they would prescribe depending on the patient's age, gender, initial blood pressure, and initial therapy will be presented.
CONCLUSIONS: This study gives researchers insights into the differences between clinical practice and clinical guidelines in hypertension treatment.

PCVD7

IDENTIFICATION OF COMOROBIDITIES AMONG A HYPERTENSIVE POPULATION USING ADMINISTRITATIVE CLAIMS AND MEDICAL RECORDS DATA

Connors H, Cleary M, Clouse J
Ingenix, Minneapolis, MN, USA

OBJECTIVE: The aim of this study was to determine concurrence of administrative claims data and medical records abstraction data with regard to selected comorbid conditions among hypertensive subjects.
METHODS: Study subjects were incident hypertensives identified by: 1) at least one claim with an ICD-9 diagnosis code of hypertension and at least one claim for an anti-hypertensive drug; or 2) at least two claims with an ICD-9 diagnosis code of hypertension, preceded by at least 6 months of health plan enrollment free of anti-hypertensive prescriptions. Nurse abstractors reviewed medical records for documentation of seven comorbid conditions, including ischemic heart disease, congestive heart failure, chronic renal failure, cerebrovascular disease, complicated hypertension, hyperlipidemia, and diabetes. To determine whether comorbidities noted in medical records data appeared in claims data, we reviewed physician, facility, and pharmacy claims for a 12-month period after the initial hypertension indicator to identify ICD-9 diagnosis codes, CPT procedure codes, or prescriptions for drugs of interest.
RESULTS: 118 subjects were included in the analysis. Claims and medical records data, respectively, identified ischemic heart disease (14 of 15); congestive heart failure (7 of 10); chronic renal failure (0 of 1); cerebrovascular disease (3 of 1); complicated hypertension (18 of 3); hyperlipidemia (44 of 73); and diabetes (25 of 18).
CONCLUSION: The extent to which claims data identified comorbidities compared to medical records data varied greatly by comorbid condition. Some of this variation may be due to limitations of medical records and claims data, including: 1) subjects may have seen additional physicians whose records were not abstracted, but subjects' comorbidities were in claims data; 2) medical records may not contain a patient's diagnosis, but pharmacy claims contain therapies; and 3) claims data may not identify chronic conditions if a patient is not receiving therapy.

PCVD8

SELECTIVE USE OF CALCIUM ANTAGONISTS FOR HIGH-RISK HYPERTENSIVES

Leader S[1], Roht L[2]
[1]Pracon, Reston, VA, USA; [2]Hoechst Marion Roussel, Kansas City, MO, USA

Confounding by indication may account for the observed elevated risk of acute myocardial infarction in hypertensives treated with calcium antagonists (CA). If CAs are preferentially prescribed for sicker patients, then increased risk of adverse events is due partly to the underlying disease, not the medication.
OBJECTIVE: To test the hypothesis that confounding by indication occurs.
METHODS: Pennsylvania Medicaid claims data were used to conduct a retrospective cohort analysis of hypertensive enrollees who received anti-hypertensive monotherapy. Diagnoses of 12 known cardiovascular risk factors recorded on medical claims 7 days or less prior to the start of anti-hypertensive drug therapy were examined. Logistic regression analysis was performed to evaluate the association between each prior diagnosis and subsequent CA use, controlling for demographic variables and other relevant diagnoses. Since CA use was not rare, we approximated the risk ratio (RR) from the adjusted odd ratio using the formula: $RR = OR/(1 - P) + (P \times OR)$ where P is the non-exposed group.
RESULTS: CAs were prescribed significantly more often than other monotherapy for patients with prior diagnoses of: arteriosclerotic cardiovascular disease (RR = 3.06; 95% CI 1.96–3.82); angina (RR = 2.03; 95% CI 1.51–2.58); COPD (RR = 1.76; 95% CI 1.14–2.45); diabetes (RR = 1.34; 95% CI 1.06–1.66); and ischemic heart disease (RR = 1.61; 95% CI 1.07–2.25).
CONCLUSION: There is strong evidence that confounding by indication occurred in this population. Findings of adverse outcomes based on observational studies of CA therapy may arise from unrecognized confounding. This possibility should be considered in the design of observational pharmacotherapy outcomes studies.

PCVD9

LEFT VENTRICULAR SYSTOLIC FUNCTION AND DRUG UTILIZATION AMONG HOSPITALIZED PATIENTS WITH CONGESTIVE HEART FAILURE

Wang AY[1], Schiff GD[2], Stamos TD[3], Weiss KB[3],Thomas J[1]
[1]Pharmacy School, Purdue University, Northbrook, IL, USA; [2]The Cook County Hospital, Chicago, IL, USA; [3]Rush-Presbyterian-St. Luke's Medical Center, Chicago, IL, USA

Guidelines for the evaluation and management of heart failure recommend different drug therapies for congestive heart failure (CHF) patients with left-ventricular (LV) systolic dysfunction versus those with normal LV systolic function (LVERSUSF). To what extent these guidelines are translated into differing prescribing in actual practice is unknown.
OBJECTIVE: To compare drug utilization in hospitalized CHF patients with and without LV systolic dysfunction.
METHODS: Medical records were reviewed for all patients with a principal discharge diagnosis of CHF from January 1 through June 30, 1997 at an urban public hospital (N = 387). LVERSUSF assessments performed within 6 months before discharge were used to classify LVERSUSF. Prescribed drug therapies were determined at discharge.
RESULTS: Of 207 patients with LV systolic dysfunction, 161 (81.0%) patients were discharged on an angiotensin-converting enzyme (ACE) inhibitor, versus 66 (71.0%) of 93 patients with normal LVERSUSF ($p = 0.05$). After excluding patients with contraindications of ACE inhibitor use, the difference in ACE inhibitor use between the patients with and without LV systolic dysfunction was not significant ($p = 0.09$). No statistically significant differences were observed between patients with and without LV systolic dysfunction regarding the utilization of diuretics (90.0% versus 91.0%), beta blockers (3.0% versus 4.0%), and alpha blockers (4.0% versus 6.0%).