Abstracts from the Poster Sessions at AMCP's 2000 Annual Meeting

The following poster presentations are to be presented at the Academy of Managed Care Pharmacy's 12th Annual Meeting & Showcase, April 5–8, 2000, in Phoenix, Arizona. The theme of this year's meeting is "A New Century of Pharmaceutical Care: Integrating Wellness, Quality, and Partnerships."

For more information about the studies described below, please contact the corresponding authors, indicated by an asterisk*, whose addresses are listed in full. The names of individuals who are scheduled to present at the meeting are underlined.

Networked the Lipid Goal Manager program for patient assessment to NCEP goals in a multiple user setting

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OBJECTIVE: Improve the continuity of care by capturing simultaneous multiuser data input into the Lipid Goal Manager Program in a managed care setting.

METHODS: Develop a procedure to adapt the single-user Lipid Goal Manager program into a multiuser program. Research methods to allow data replication between workstations using either Microsoft Access 97 (MS Access 97) tools or Microsoft Office 97 Development Edition (MS ODE) tools. Evaluate the capabilities, costs, benefits, and ease of use of both methods.

RESULTS: Both methods studied provided data replication over a local area network. The first method, utilizing MS Access 97, allowed manual synchronization and required clinicians to have a working knowledge of MS Access 97 in order to periodically synchronize their workstation with the server. This method required MS Access 97 on each workstation. The MS ODE tools allowed automatic, scheduled synchronization with all workstations while being transparent to the user. MS ODE may run from one workstation or server eliminating a need for MS Access 97 at individual workstations.

CONCLUSION: The research resulted in the successful implementation of a cost-effective, easy to install, user friendly method for multiuser access to Lipid Goal Manager. For a minimal investment, MS ODE with the Lipid Goal Manager program enhances continuity of care in the management of hyperlipidemic patients by providing clinicians accessible consolidated patient data.

Learning Objectives: Audience participants will:
1. Understand how to move from a single-user environment to a multiuser environment using Lipid Goal Manager.
2. Understand principles of sharing (synchronizing) data over a network.
3. Understand data synchronization using MS Access and MS ODE.

Financial impact of quantity dispensed on cost of antiretroviral therapy

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OBJECTIVE: Determine the financial impact, from the payors' perspective, of dispensing 30 versus 90 days of antiretrovirals through retrospective analysis of pharmacy records.

METHODS: Antiretroviral therapy is frequently changed due to patient intolerance or viral resistance. These changes can result in drug being dispensed but not used. Due to the high cost of antiretrovirals, we hypothesized that dispensing a 90-day supply would result in higher costs associated with unused medication than a 30-day supply. A randomly selected sample of patients receiving antiretrovirals between 5/13/99 and 8/13/99 was identified. Medication profiles were reviewed to determine the frequency of changes resulting in lost drugs. The financial impact of these changes was determined using AWP for a 30-day supply and extrapolating to a 90-day supply.

RESULTS: 63,400 patients (16%) had changes in antiretroviral regimens, averaging 1.36 medications changed per occurrence. The average days of therapy lost was 8.1 vs. 42.6 in the 30-day and 90-day models, respectively. The associated financial impact was $8,479.67 based on actual 30-day shipments versus $43,413.79 in the 90-day model.

CONCLUSIONS: Though only a small percentage of patients changed therapy in a given 90-day period, the high cost of antiretrovirals amplifies the financial impact of changes resulting in unused drug. These cost considerations should be factored into payors' decisions about days supply of antiretrovirals required by their pharmacy benefit.

Learning Objectives: Audience participants will:
1. Describe issues that may result in antiretroviral regimen alteration or discontinuation.
2. Identify the frequency of antiretroviral regimen changes identified in a specific patient sample.
3. Discuss the financial impact associated with antiretroviral regimen alterations in a specific patient sample.

**Differences in utilization and cost of care for patients on dual protease inhibitor (PI) regimens: PI-naive vs. PI-experienced patients**

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**OBJECTIVE:** To determine differences in health care utilization and cost for patients on dual PI regimens, based on degree of previous PI experience (PI-naive, one previous PI regimen, two or more previous PI regimens).

**METHODS:** 1,933 patient charts were audited to identify patients starting on a dual PI-containing regimen between 1/1/96 and 12/31/98. Exclusions were made for inappropriate therapy combinations according to clinical guidelines. Utilization and cost of care for 1998 were determined from insurance claims data for a subset of the population.

**RESULTS:** Average cost of care per patient per month (PPPM) was comparable for PI-naive patients (n=49; $1,780 PPPM) and patients with one previous PI regimen (n=68; $1,727 PPPM), but increased for patients with >1 previous PI regimen (n=66; $2,631 PPPM). The main components of cost increase were hospital care and home health care. The three groups also differed in number of acute hospital days PPPM (0.066 for PI-naive, 0.013 for one previous PI, and 0.102 for >1 previous PI).

**CONCLUSIONS:** Utilization and cost of care increases significantly for dual PI patients who have been exposed to two or more previous PI regimens, suggesting that dual PI therapy is of more benefit when used earlier in a patient’s course of therapy.

**LEARNING OBJECTIVES:** Audience participants will:
1. Learn about utilization and cost of care for patients on dual PI regimens.
2. Understand difference in utilization and cost based on degree of PI experience.
3. Learn about the benefits of using dual PI combinations in initial as opposed to salvage therapy.

**The early impact of a peptic ulcer disease information dissemination program in a managed care plan**


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**OBJECTIVE:** To evaluate the effectiveness of an information dissemination program including practice guidelines, treatment algorithms, and peer comparison feedback in changing physicians’ prescribing behaviors in the treatment of patients with peptic ulcer disease (PUD).

**METHODS:** A prospective, controlled, randomized intervention was conducted. Changes in treatment patterns over a three-month study period were evaluated to determine the impact of the program in changing physicians’ behavior. Pharmacy claims data were used to assess impact of the program on utilization of eradication therapy, long-term antisecretory utilization, and total cost of drug therapy per patient. Patient health-related quality of life and patient satisfaction with care were assessed using the SF-12 and the Gastrointestinal Symptom Rating Scale (GSRS) via a telephone survey.

**RESULTS:** Changes in quality of life scores on the SF-12 and the GSRS were consistent with what was expected, though not statistically significant for patients in the intervention group compared to the control group. There was a statistically significant increase in utilization of eradication therapy for physicians in the intervention group compared to physicians in the control group during the post-intervention period, which was not accompanied by a significant increase in the total cost of drug therapy per patient.

The main goal of the study, to increase the utilization of eradication therapy, was achieved. Observable modification of physician behavior in only a three-month follow-up period is a very positive finding, and may indicate an even greater impact when the program is evaluated over a longer period of time.

**LEARNING OBJECTIVES:** Audience participants will:
1. Learn about successful methods of information dissemination.
2. Learn about the impact of an educational intervention on members’ clinical, humanistic, and economic outcomes.
3. Learn about clinical information that can be utilized to increase physician’s adherence to national treatment guidelines for PUD.

**Are consumers satisfied with their prescription drug plans? A closer look at both plan and patient characteristics**

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**OBJECTIVE:** The main objective of this study is to assess consumers’ satisfaction with prescription drug plans and determine the influence of type of plan, patient demographic, and health status characteristics on satisfaction.

**METHODS:** Patient interviews were conducted in ten randomly selected pharmacies located throughout an urban county. Patients were asked to respond to an interval-level scale whose referent is satisfaction toward their prescription drug benefit. The scale is composed of items which were weighted through a pair wise comparison procedure. This enables broad applicability of the scale to compare different types of plans in one region, or even plans across various regions. Respondents also answered questions about the type of plan in which they are

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enrolled, the importance they place on the design of their prescription benefit, the presence of disease states, the number of prescriptions they purchase, and various demographic items. Suitability was determined initially through t-tests and one-way ANOVA procedures, then confirmed by a backward-elimination regression analysis.

RESULTS: On a satisfaction scale ranging from 13.29 to 132.9, the mean obtained from 341 responses was 107.59. Patients were most satisfied with pharmacy location and least satisfied with the effectiveness of a help desk to answer their questions. Patients with certain chronic disease states (e.g., diabetes, hypercholesterolemia) were more satisfied with their prescription drug coverage, but patients with anxiety or depression were less satisfied. Also influencing patient satisfaction were plan type (POS patients were most satisfied, PPO patients were least satisfied), patient knowledge, principle source of information, income, and age.

CONCLUSIONS: Numerous factors affecting patient satisfaction with their prescription benefit were identified. This should enable plan administrators to either make changes in benefits design or more accurately target marketing initiatives designed to inform current members or attract new ones.

LEARNING OBJECTIVES: Audience participants will:
1. Learn how satisfied most patients are with their prescription drug coverage.
2. Describe the factors most likely to influence patient satisfaction with their prescription benefit.
3. Identify principle sources from which patients are likely to receive information about their prescription drug plans.
4. Recognize areas of deficiency in patient knowledge about their prescription benefit.

Patient factors associated with hormonal replacement therapy utilization

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OBJECTIVE: To determine patient factors associated with hormonal replacement therapy (HRT) utilization.

METHODS: A cross-sectional study research design was implemented using pharmacy claims data from the MarketScan Select Base and Prescription Drug files (1993-1996 calendar years). The study sample consisted of 3,206 women most likely to be post-menopausal (age ≥ 50 years old). A logistic regression statistical method was used to analyze HRT utilization.

RESULTS: The analysis documented a 48% decrease in the likelihood in HRT utilization, defined as receipt of one or more prescriptions in a year, with every five-year incremental increase in age (p<0.001). Women with baseline diagnoses of cardiovascular disease and breast cancer were less likely to use HRT by 31% (p<0.001) and 74% (p<0.001), respectively. Women using an antihypertensive medication at baseline were 24% less likely to use HRT (p=0.02), compared to women with no baseline medications. Use of medications for depression, migraines, and vaginal conditions increased the likelihood of HRT use by 66% (p<0.001), 76% (p=0.02), and 102% (p<0.001), respectively. Women living in the North-Central, Northeast, and South regions were less likely to take HRT compared to residents of the West by 61% (p<0.001), 75% (p<0.001), and 44% (p<0.001), respectively.

CONCLUSIONS: Patient utilization of HRT varies with age, comorbid disease state diagnoses, pharmaceutical utilization, and geographic location.

LEARNING OBJECTIVES: Audience participants will:
1. Recognize that hormone replacement therapy (HRT) utilization in women declines with age.
2. Recognize that women with diagnoses of cardiovascular disease and breast cancer are less likely to initiate the use of HRT.
3. Understand that HRT utilization among women varies across different geographic regions.

Proportion of National Cholesterol Education Panel target attainment with lipid-lowering therapy

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OBJECTIVE: To assess prescribing patterns and measure clinical outcomes in relation to National Cholesterol Education Panel (NCEP) guidelines among patients taking lipid-lowering medications as part of a quality improvement program at 22 U.S. managed care plans.

METHODS: Patients receiving lipid-lowering therapy were randomly selected from a pharmacy claims database. Demographic and clinical data were collected by medical chart review during July 1998-July 1999.

RESULTS: Data from 6,131 patients were evaluated. Mean age was 61.6 ± 11.7 years; 44% were women. A significant proportion of patients (20%) did not have documented follow-up panels for low-density lipoprotein cholesterol (LDL-C) levels. Available documentation showed that 52% of patients met NCEP target levels for LDL-C on statin therapy; 27% did not. Considering only patients who did have complete documentation, 66% attained goal and 34% did not. The NCEP treatment target was LDL-C 160 mg/dl. For 1,774 patients (29%); 1,200 of these (68%) were documented to attain the treatment goal. Mean NCEP goal attainment by various statins ranged from 51% to 76% (of patients with complete documentation). Mean reduction in LDL-C for all statins was 30% (range, 22% to 36%).

CONCLUSIONS: Many patients who take antihyperlipidemic medication do not reach NCEP LDL-C target levels. Follow-up information for these patients needs to be documented more rigorously so that the rate of goal attainment can be known and improved. This observational study supports the need for continuous quality improvement initiatives in the clinical manage-
ABSTRACTS

Demonstrated savings in various model types with conversion to three-tier formularies

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OBJECTIVE: To quantitatively assess the financial impact of conversion from an open formulary to an incentive based three-tier formulary design at several PBM managed health plans of various model types.

METHODS: Copay structure is one of the major considerations in predicting cost savings to the plan. Drug product utilization and expenditures from several PBM managed health plans of various model types were collected and reviewed. Copay differentials were selected and drug products were assigned to copay tiers. Depending on the three-tier implementation date, the overall per member per month (PMPM) costs and those for several key drug classes of high utilization and expenditures were measured at six months after conversion and compared to baseline and/or projected costs. Percentage savings PMPM were calculated.

RESULTS: Total PMPM costs for one HMO decreased by approximately 22% six months after implementing a three-tier formulary. In a municipal employee plan—where pharmacy costs were expected to increase by approximately 23% based on historical data—the total PMPM costs decreased by 8% six months after starting the three-tier benefit. Another HMO achieved direct savings of $0.43 PMPM six months post-initiation of a three-tier benefit. These plans achieved savings as a result of member cost sharing due to increasing copayments, prescription quantity limits, prior authorization procedures, and incentivizing the use of preferred branded products.

CONCLUSIONS: Conversion from an open to a three-tier formulary is a cost containment alternative for plans that either desire or are mandated to keep product choice open to providers and patients. Through the implementation of the three-tier system, overall plan savings were realized for several PBM managed plans at six months after initiation.

Managing self-administered injectable medication costs: a medical group prospective

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SUMMARY: The majority of MedClinic Medical Group (MCMG) contracts with health plans place self-administered injectable medications within the capitation for medical services, thus MCMG is responsible for the cost and utilization of these medications.

In July of 1999, MCMG initiated a new policy and procedure for obtaining self-administered injectable medications. The policy states that self-administered injectable medications must be authorized through the group’s utilization department. “Guidelines for Approval” were developed for each injectable medication. Once the medication is authorized through the utilization department, all patients are directed to contracted pharmacies to obtain their medications. The pharmacy bills MCMG an agreed amount plus a dispensing fee for each medication. Self-administered injectable medication bills are adjudicated through the MCMG claims department.

RESULTS: This new process has resulted in a savings of $10,500 per month to the medical group for self-administer injectable medications. These savings are the result of improved screening for appropriate use of self-administer injectable medications, an 8% reduction in acquisition price of the medications, and improved auditing of claims.

Significant savings of self-administer injectable medication costs can be realized by a medical group through the implementation of proper authorization and auditing procedures. Contracting with local pharmacies to obtain self-administer injectable medications will result in additional savings.

LEARNING OBJECTIVES: Audience participants will:
1. Describe self-administered medication contracting issues between medical groups and health plans.
2. Learn about authorization procedures within a medical group for self-administered medications.
3. Learn about adjudicating and auditing claims through the medical group’s claims department versus deduction of costs

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from medical capitation payments.
4. Learn about cost saving opportunities for the medical group from direct contracting with local pharmacies.

Clinical action team challenges antibiotic use trends

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SUMMARY: The clinical action team (consisting of physicians, pharmacists, marketing and customer service) was designed to raise awareness and educate physicians, members, associates and communities about emerging resistance to antimicrobial agents and related increased use of second-line antibiotics.

All objectives of this project closely match the public awareness campaign of the Centers for Disease Control and Prevention (CDC). By partnering with the public messages of CDC, we distributed their treatment guidelines and patient education literature designed to promote understanding of careful antibiotic use to prevent resistance. Pharmacy claims data was used to identify and intervene with high prescribers of broad-spectrum antibiotics.

RESULTS: Educational interventions focused on two usage problems—unnecessary antibiotic treatment of viral infection and rising use of second-line antibiotics. Programming included letters to physicians with printed CDC treatment guidelines recommending first-line antibiotics, when an antibiotic is indicated, for most respiratory outpatient infections. Clinical pharmacists made presentations to physician groups regarding appropriate antibiotic utilization and distributed educational literature intended for members about careful antibiotic use. Physician newsletters and “fax bombs” included articles discussing increasing antibiotic resistance and graphs of rising second-line antibiotic use and cost comparison of first-line vs. second-line antibiotics. The managed care organization supported distribution of patient educational literature printed by select pharmaceutical companies.

CONCLUSIONS: Although total dollars spent on antibiotics in 1998 continued to rise, the total number of scripts written for all members and, most importantly, the number of scripts per member showed a decline of 3.27%. There were significant first-line antibiotic cost increases in 1998. The cost of second-line antibiotics per member per month did not increase in 1997. Overall, the trend to write more antibiotics did not continue at the same rate as recent years and resulted in an overall cost avoidance of nearly $1.2 million dollars.

LEARNING OBJECTIVES: Audience participants will:
1. Recognize the increasing emergence of bacterial strains resistant to antimicrobial agents as a major public health concern.
2. Learn about the changing antibiotic utilization trends within a large managed care organization.
4. Describe interventions to educate providers and members regarding appropriate antibiotic use and address high second line antibiotic utilization.

Incidence and cost of concomitant antifungal use among patients using inhaled bronchial steroid

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OBJECTIVE: The purpose of this study was to determine the incidence and cost of concomitant antifungal therapy among patients using different inhaled bronchial steroid (IBS) products.

METHODS: A retrospective database study was conducted using a nationally representative pharmacy benefits management (PBM) claims database. Patients (n=226,555) were included in the study if they filled prescriptions for IBS products during the period July 1, 1998 through June 30, 1999, had continuous insurance eligibility during the study period, and had not filled a prescription for sulfamethoxazole/trimethoprim during the study period.

RESULTS: Patients using triamcinolone acetonide (Azmacort) had a significantly lower incidence of treatment with antifungals than patients using other IBS products. There were no statistically significant differences in the cost of concomitant antifungal therapy across patient cohorts; however, a cost analysis indicated that switching patients from other IBS products to triamcinolone acetonide would result in a cost savings of $48,499.78 for treatment of oral candidiasis.

CONCLUSIONS: Compared to other IBS products, the use of Azmacort with its built-in spacer, is associated with a lower incidence of concomitant antifungal therapy, a marker for the occurrence of oral candidiasis. In addition, a lower incidence of oral candidiasis could be expected to result in higher patient compliance with IBS therapy, fewer office visits and emergency room visits for complications of therapy, and greater patient satisfaction with health care delivery.

LEARNING OBJECTIVES: Audience participants will learn:
1. The need for spacers in metered dose inhaler IBS products.
2. To understand the relationship between steroid deposition and the occurrence of oral candidiasis.
3. To describe the benefits of effective IBS therapy.

Coronary Heart Disease and the Adherence of National Cholesterol Education Program (NCEP) Guidelines in a Physician Group Practice

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OBJECTIVE: To determine the adherence of NCEP guidelines

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by a physician group practice in treating patients with secondary hypercholesterolemia and establishing benchmarks for quality improvement.

**METHODS:** This outcomes analysis was part of a continuous quality improvement program conducted in a physician office practice in the Southeastern United States. Patients were randomly selected from a database of ICD-9 codes based on patients with a coronary event. A retrospective medical chart review was conducted and pertinent data points were collected and analyzed using a master data collection form.

**RESULTS:** Data was evaluated from 417 charts. The average age of patients was 73.4 (53.96% male and 46.04% female) The average number of risk factors was 2.645 (356 had 2 or more). On only 88 charts was counseling of diet recorded. Based on NCEP guidelines, 26.2% of the patients that should have been on therapy were not. Of the 206 patients on therapy, 20.9% did not have a recent (<1 year) cholesterol reading. 23.8% were not at NCEP goal, and 4.9% never had a LDL value drawn.

**CONCLUSIONS:** This study establishes benchmarks for which an intervention will be implemented and results compared to. Although physician compliance to treatment guidelines and documentation in the charts was less than adequate, the percentage of patients at goal was above the national average.

**LEARNING OBJECTIVES:** Audience participants will:
1. Recognize the quality improvement program currently implemented at this physician practice site and the importance of continuous quality improvement programs.
2. Recognize the value quality improvement programs have on meeting the National Committee on Quality Assurance (NCQA) accreditation and Health Employer Data and Information Set (HEDIS) guidelines.
3. Understand the National Cholesterol Education Program (NCEP) guidelines and the importance of treatment using the guidelines in patients with hypercholesterolemia.
4. Understand current physician compliance rates to NCEP guidelines.

### Cardiovascular events following hormone replacement therapy and lipid-lowering agents in postmenopausal women post myocardial infarction

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**OBJECTIVE:** To identify differences in incidence of cardiovascular events and mortality in postmenopausal women post myocardial infarction (MI) receiving estrogen replacement therapy (ERT), lipid-lowering therapy, combination therapy or no therapy.

**METHODS:** A retrospective database study involving claims from a Midwest health-care plan (1.4 million lives) was screened to identify full-coverage women age 60 or greater with a diagnosis of MI from 1/1/94 to 6/30/96. Related medical and pharmaceutical claims were captured through 12/31/97 for clinical endpoints including mortality, cardiovascular morbidity, and procedural events. Statistical analysis for all treatment groups included raw incidence rates and risk ratios adjusted for comorbidities and age using proportional hazard modeling.

**RESULTS:** 471 women met selection criteria. Overall mortality was 4.5% with ERT, 6% with lipid-lowering therapy, 1.9% with combination therapy and 23% with no therapy. The decreased risk of death in all treatment groups was significant compared to no treatment (ERT, p=0.04; lipid-lowering therapy, p=0.0003; combination, p=0.04). Mechanical events occurred in 73% to 98% of patients; however, a significant increase in events was seen in the lipid-lowering therapy (p=0.0001) and combination therapy (p=0.02) groups compared to no treatment. There was no significant difference in electrical or procedural events in treatment versus nontreatment groups.

**CONCLUSIONS:** Treatment with ERT with/without lipid-lowering therapy post MI did not change the occurrence of cardiovascular events but decreased mortality. These findings are in accordance with the Heart and Estrogen/progesterone Replacement Study which concluded that ERT therapy was no different than no treatment for cardiovascular events, excluding death.

**LEARNING OBJECTIVES:** Audience participants will:
1. Understand the potential effects of hormone replacement therapy on cardiovascular events post MI in postmenopausal women.
2. Understand the potential affects of lipid-lowering agents on cardiovascular events post MI in postmenopausal women.
3. Understand how this retrospective information correlates to the Heart and Estrogen/PROGesterone Replacement Study and the American Heart Association/American College of Cardiology consensus statement on secondary prevention of coronary heart disease in postmenopausal women from retrospective data.

### Decreased healthcare utilization costs with increased use of protease inhibitors (PIs) in HIV+ patients—including an evaluation of high risk factors (HRFs)

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**OBJECTIVE:** To assess the effect of increased use of protease inhibitors (PI) on healthcare utilization costs in HIV+ patients.

**METHODS:** Data were collected from paid-claims insurance forms on use of PIs in 1996-1998 in 2,336 HIV+ patients in three U.S. regions (West, Southwest, Mid-Atlantic). West and Southwest populations are commercially insured, non-IVDU, 95% white males, mean age 44 years. Mid-Atlantic population is from a private/public, inner city clinic, 33% IVDU, 56% black, 66% male, mean age 49 years. Paid claims data for 1997-1998 were analyzed and compared to initial analysis. Patients were classified by PI history and time since initiation of PI, <1 year, ≥1 year, not on PI. Costs per patient...
per month (PPPM) were compared by year, for each region, and the group as a whole in terms of oral medications, professional fees, home healthcare, laboratory and hospitalization. High risk factors (HRFs) were also analyzed for initial evaluation of health care costs.

RESULTS: Analysis from 1996-1998 (six months) indicates for each 10% increase in P1 use there was an $86 increase PPPM in cost of oral medication, with a net decrease in overall cost of $135 PPPM. Complete 1998 data to follow, including evaluation of HRFs.

CONCLUSIONS: Between 1996-1998 (six months), increased P1 use correlated with a large decrease in total cost of treatment of HIV+ patients despite increased initial cost of oral medications. As patient demographics change in HIV disease, patient cohort populations will be compared over time to evaluate suppression rates, clinical and cost outcomes in IVDU/non-IVDU populations.

LEARNING OBJECTIVES: Audience participants will:
1. Understand the key difference of traditional randomized, controlled efficacy trials versus effectiveness (real-world) trials.
2. Recognize the problems that can arise when conducting an effectiveness trial in managed care settings, and how those problems can be addressed.
3. Learn about the basic methods for evaluations health economic outcomes from effectiveness trials.

**Hepatitis C screening: a process of education and outcome**

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SUMMARY: Hepatitis C, the leading cause of cirrhosis and liver transplantation, affects 1.8% of the U.S. population (~4 million). The majority of Americans are unaware that they are at risk, were at risk, or are affected. We hypothesize that a multimedia educational campaign and screening program in a large urban area would allow us to educate and identify an enhanced proportion of infected individuals. The multimedia campaign included print, television and radio advertising to help heighten awareness and educate the population regarding Hepatitis C transmission and its risk factors. We additionally questioned the value of the confidential risk assessment questionnaire to participating subjects. The six-item risk assessment focused on sexual practice, drug use, exposure to blood products, and lifestyle.

Using an at-home finger stick immunoassay developed by Home Access, 6,687 patients were tested free of charge for Hepatitis C during a 14-day period at 26 Chicagoland Walgreens pharmacies. Patients were given a toll-free number to call and obtain their test result. Prior to reporting test results, the six-item risk assessment was administered.

The risk factors self-reported by positive patients are as follows: (1) exposure to blood products before 1992, 38% (146/384); (2) drug use, 36.2% (139/384); (3) sex with a Hepatitis C positive person, 6.25% (24/384); and (4) living with a Hepatitis C positive person, 6.0% (23/384). When comparing males and females, other than the higher incidence of drug use by males (25.8% vs. 10.4%), all other risk factors are similar.

RESULTS: Of those screened, 5.7% (384/6,687) of the patients tested positive for Hepatitis C, which is three times the national prevalence rate. This program demonstrated that a multimedia educational campaign and screening program allowed us to enhance the identification of infected individuals.

LEARNING OBJECTIVES: Audience participants will:
1. Recognize the success of a multimedia campaign in identifying patients at high-risk for Hepatitis C.
2. Determine the occurrence of certain risk factors that are highly correlated with an individual testing positive for Hepatitis C.

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Headache outcomes improve using tailored educational materials and interactive voice response technology in a disease management approach for managed care

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OBJECTIVE: The objective of this single center, targeted enrollment study was to evaluate the effectiveness of a headache disease management approach using tailored education and interactive voice response (IVR) technology in a managed care setting.

METHODS: Members of Marshfield Clinic/Security Health Plan called an IVR to enroll in HEADTalk. Data collected included headache pain and frequency, impact/quality of life, healthcare utilization, and functional status. After baseline IVR completion, participants received a response-tailored headache information kit. Six weeks after baseline, additional tailored education was mailed. Participants who completed three- and six-month follow-up IVR questionnaires received additional tailored educational materials.

RESULTS: 176 members enrolled and completed the baseline IVR questionnaire; of those, 95 (54%) completed the six-month IVR questionnaire. Number of headache days and severe headache days decreased by 5.7 and 3.7 days respectively (p<0.05) and headache pain rating decreased from 8.1 to 7.5 (scale 0-10; p<0.005). Number of doctor/clinic visits per month were reduced by 38% (0.60 to 0.37 visits; p<0.05). Significant improvements were seen in work time lost: number of reduced productivity days and number of total workdays lost decreased by 3.5 and 3.6 days respectively (p<0.0005). Number of missed days for social activities decreased from 5.8 to 4.0 days (p<0.01) and missed housework/schoolwork days decreased from 11.2 to 8.7 days (p<0.05).

CONCLUSIONS: A headache disease management approach using tailored education and IVR technology was effective in improving headache outcomes in a managed care setting and may be a useful adjunct to existing clinical processes for headache care.

LEARNING OBJECTIVES: Audience participants will:
1. Understand that a disease management approach is effective in changing headache management in a managed care setting.
2. Learn about the use of an IVR for data collection in a disease management approach.
3. Learn that tailored patient education positively impacts headache management.

Development and evaluation of a patient knowledge questionnaire and educational program for hyperlipidemia patients

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OBJECTIVE: To develop and validate a hyperlipidemia patient knowledge test. The instrument is designed to measure patients' understanding of hyperlipidemia and the role of lifestyle modification in treatment. It was used in one community pharmacy and a multisite (15) VA hyperlipidemia study.

METHOD: A 17-item true/false questionnaire, developed by clinical pharmacy practitioners, was read to patients as they followed along. The instrument was administered to 51 community-based hyperlipidemia patients and to 460 patients in the DVA ambulatory study at the initial and final visits.

RESULTS: Coefficient alpha for the community study was 0.77 and 0.633 for the VA study. In the community study, the treatment group (N=25) improved from a pretest mean percent correct (SD) of 76.90 (11.51) to 82.12 (10.67), p<0.01. The control group (N=26) improved from a pretest mean percent correct (SD) of 81.90 (10.77) to a postest 83.71 (11.08), p<0.05. In the VA study, the treatment group (n=307) improved from a pretest mean percent correct (SD) of 85.50 (14.26) to a posttest of 90.01 (10.36), p<0.01. The control group (N=153) improved from a mean percent correct (SD) on the pretest of 84.39 (15.69) to a mean percent correct (SD) on the postest of 84.65 (15.02), p>0.05.

CONCLUSION: The knowledge test instrument proved to be a sound research tool and should be utilized in studies where patient education is an important component of patient care.

LEARNING OBJECTIVES: Audience participants will:
1. Understand the use of a patient knowledge instrument for hyperlipidemia patients.
2. Describe some of the challenges with the use of a patient knowledge questionnaire with ambulatory care patients.
3. Discuss how results of a patient knowledge questionnaire may be used to assess patient understanding of hyperlipidemia. This study was supported by a research grant from Novartis Pharmaceuticals, Inc. to the Universities of Tennessee and Arizona Colleges of Pharmacy.

Physician profiling for pharmacy: experience in the medical group setting

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SUMMARY: MedClinic Medical Group is a 150-provider multispecialty physician group that has capitated contracts for 80,000 patients. Pharmacy risk is a component of 75% of these capitated contracts. In an attempt to control pharmacy costs individual physician profiling was undertaken. Medication management programs in depression, allergy, and lipid therapy were developed. Prescribing profiles were incorporated for each of these categories. The profiles included individual prescribing data as well as a specialty comparison within the medical group. Each provider received this data one week prior to a profiling session. At the profiling session the medication management programs were introduced and targets were set in each category for medication use and potential cost savings. Providers were given the opportunity to discuss their profiles individually or in a small group setting. As a follow-up to these sessions, prescribing profiles in these targeted areas were sent to providers at three months and at six months with comments on individual profiles. Overall group data that compared pre and post pharmacy cost and utilization was also distributed.

RESULTS: The overall results showed a reduction in cost per prescription in each category, varying results in utilization and an overall decrease in PMPM. Medication management programs that include physician profiling for pharmacy can reduce overall pharmacy expenditures in the medical group setting.

LEARNING OBJECTIVES: Audience participants will:
1. Describe an effective method for presenting physician profiling of medications.
2. Learn about medication management programs.
3. Learn how to measure the effectiveness of physician profiling and medication management programs.

Fosamax or fosamin? Results of a survey of Medicare risk HMO patients
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OBJECTIVE: To determine percentage of correct or incorrect use of Fosamax and calcium supplement utilization among selected patients enrolled in a Medicare health maintenance organization.

METHODS: Medicare patients who participated in a medication review program and took Fosamax were consulted by telephone with a clinical pharmacist to determine how the patients were taking Fosamax, along with the use or nonuse of calcium supplementation. Each patient's understanding of and compliance with the directions for taking Fosamax and utilization of calcium supplementation were recorded on a data collection form. The results were analyzed to determine: (1) the percentage of patients who adhere to the Fosamax directions; (2) the reasons for any adherence problems; and (3) the percentage of patients taking supplemental calcium.

RESULTS: One hundred and twenty-one (121) responses from three divisions within the HMO were recorded. It was determined that approximately 88% of the patients interviewed take Fosamax correctly, leaving 12% taking it incorrectly. The most striking finding was that approximately 20% of the patients did not use calcium supplementation, whether taking Fosamax correctly or incorrectly.

If the consulting pharmacist noted a concern, the patient received, both orally and in writing, the proper directions and/or calcium intake needed to achieve the greatest effect of Fosamax, or a suggestion was made regarding an alternative therapy if necessary. Follow-up occurred after 30+ days of consultation to determine the patient's adherence and understanding.

Fosamax is a medication proven to reduce osteoporosis; however, adherence to the proper directions and adequate intake of calcium and vitamin D is also necessary. The majority of the interviewed Medicare patients did take Fosamax correctly. For those who took it incorrectly, the most common error was not waiting at least 30 minutes before taking any other medicine. While approximately 12% of the patients took Fosamax incorrectly, an even greater percentage, roughly 20%, did not take any calcium supplement.

CONCLUSION: Health care professionals must reinforce the proper directions for taking Fosamax and the necessity of adequate intake of calcium and vitamin D to reduce the risks associated with osteoporosis in the elderly.

LEARNING OBJECTIVES: Audience participants will:
1. Review the proper directions for taking Fosamax to achieve the greatest effect on bone density.
2. Learn the major reasons for nonadherence to Fosamax.
3. Determine whether calcium and vitamin D supplementation is really necessary for those taking Fosamax.
4. Understand what health professionals in a managed care organization can do to ensure correct use of Fosamax and recognize the need for supplementation to reduce the risks associated with osteoporosis.

Economic evaluation of an education program in patients with asthma
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OBJECTIVE: To determine impact of an asthma education program on medical treatment costs from the third party payors' point of view.

METHODS: The study was designed to determine changes in resources used by asthmatic patients nine-month periods before (1/97-9/97) and after (1/98-9/98) implementation of the program, using claim data. A three-month washout period (10/97-
12/97) was incorporated to minimize any possible carryover effect from the medical service use pattern during the pre-program phase. Of the asthma patients who were diagnosed at least 12 months prior to the time of the program, 2,235 patients were in the intervention group (IG), and 3,292 patients served as the control group (CG). Direct medical treatment costs associated with asthma were analyzed to determine statistical differences before and after the program, using Wilcoxon signed rank test and Mantel-Haenszel test.

RESULTS: The total asthma treatment costs decreased significantly from $56 to $48 per patient per month in IG (p<0.001), while treatment costs in CG increased from $25 to $26 (p>0.5). After implementation of the asthma program in IG, the costs of hospitalization (p>0.2), emergency room visits (p<0.001) and physician visits (p<0.001) decreased by 20%, 27%, and 27% respectively, but asthma drug cost increased from $19 to $20 per patient per month (p<0.2).

CONCLUSIONS: Intensive patient education and management should be advocated to reduce treatment costs per patient with asthma. This can be achieved with implementation of an intensive asthma management program.

LEARNING OBJECTIVES: Audience participants will:
1. Understand how intense patient education and management can reduce asthma treatment costs.
2. Learn about the types of clinical interventions that can positively affect asthma treatment costs.
3. Recognize the active role pharmacy benefit managers can play in reducing asthma treatment costs.

Use of computer-generated reminders in the management of coronary heart disease patients enrolled in a managed care organization

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OBJECTIVE: To describe the use of automated reminders on the measurement of LDL-C and treatment to LDL-C goal in CHD patients and to attempt to evaluate the use of an additional reminder (referral of CHD patients to a nurse-based lipid clinic) on these outcomes.

METHODS: Data were collected from an HMO's electronic medical record system from January 1997–July 1998. For the evaluation of the "standard" reminder, a pre/post design was utilized to measure the impact of physician reminders on the measurement of LDL-C and percentage of patients treated to LDL-C goal. For the lipid clinic study, sites were randomized to either the "standard" reminder alone or the "standard" reminder plus a special reminder regarding the availability of a lipid clinic. Proportions of patients at LDL-C goal and those with a documented follow-up LDL-C were compared using chi-square.

RESULTS: Comparing January 1997 vs. July 1998, the number of patients without an LDL-C documented was reduced from 30% to 18% (p<0.001). The percentage of patients achieving LDL-C goal (≤100 mg/dL) improved from 10% to 27% (p<0.001). The special reminder did not result in physicians referring even a modest number of patients to a nurse-based clinic (only 6% of eligible patients were referred).

CONCLUSIONS: An increase in LDL-C measurement and percentage of CHD patients at LDL-C goal was observed after reminders were initiated, suggesting that further evaluation of reminders is worthwhile. The very small number of patients referred to the lipid clinic prevents any conclusion from being made regarding the value of the lipid clinic intervention.

LEARNING OBJECTIVES: Audience participants will:
1. Learn about how computer-generated reminders on the measurement of LDL-C levels and treatment to LDL-C goal in CHD patients can be used in managed care settings.
2. Understand the importance of clinical practice improvement in the management of CHD patients.
3. Learn about patient outcomes management in a large managed care setting.

Retrospective database analyses: a case example of antidepressant use patterns in a managed care organization

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OBJECTIVE: To describe retrospective database analyses by providing a case example of how an analysis of antidepressant utilization patterns assisted in a decision-making process. The secondary objective is to determine the relationship between antidepressant utilization patterns (treatment completion, switching, and augmentation) and overall health care costs from a managed care perspective.

METHODS: Retrospective pharmacy and medical claims from a large managed care organization were analyzed for each member over a nine-month follow-up period (n=2,379). Treatment completion is defined as receiving at least 180 days of therapy at a minimum therapeutic dose defined by the AHCPR guidelines.

RESULTS: Total drug costs were higher in patients who completed therapy ($724 vs. $307; p<0.01), medical costs were similar ($1,143 vs. $1,062, p=0.84), and total costs were higher ($1,868 vs. $1,370, p<0.01). After controlling for confounding factors in a multiple regression analysis, patients who completed therapy had a higher total cost compared those who did not ($460, p<0.001).

CONCLUSION: In this population, it appears that those who complete antidepressant therapy have a higher total cost mainly

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due to higher drug cost. These findings do not support data presented elsewhere. No formulary changes were made as a result of this analysis. Information obtained from retrospective database analyses can be very useful in the decision-making process.

**LEARNING OBJECTIVES:** Audience participants will:
1. Learn how to analyze pharmacy and medical claims data to assist in decision-making.
2. Learn how to measure pharmacy utilization patterns consistent with quality of care such as medication compliance, switching, dosage titration, and concurrent therapy.
3. Learn how to integrate pharmacy and medical databases to establish relationships between pharmacy utilization patterns and medical outcomes.
4. Recognize the importance and value of using retrospective database analyses to assist in decision making.

### The impact of a post-MI provider-based quality improvement initiative

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**OBJECTIVE:** The purpose of this research is to investigate impact of the Post-Myocardial Infarction Quality Improvement Initiative.

**METHODS:** The Post-Myocardial Infarction Quality Improvement Initiative is an interactive provider-based pharmacy intervention program designed to increase provider awareness of current recommendations of the American College of Cardiology and the American Heart Association. The intervention program involved integration of medical and pharmacy claims data to identify members with a diagnosis of acute myocardial infarction who have no contraindications to a beta-blocker and no history of beta-blocker use. Provider-specific reports are generated listing members under the provider’s care who are eligible for beta-blocker therapy. Provider mailings are directed to the primary care physician which include a letter, a pharmacy utilization report, post-MI prescribing guidelines and a survey response form. Pharmacy claims data is used to measure the number and percent of members newly started on a beta-blocker post implementation of the QI intervention.

**RESULTS:** Prior to the intervention, 1,526 out of 2,681 (56.92%) of eligible members were on a beta blocker post-MI and 2,168 out of 3,226 (67.2%) were on a beta blocker after the intervention (p<0.001). The number and percent of members on a beta blocker pre- and post-intervention differed by market.

**CONCLUSION:** The Post-Myocardial Infarction Quality Improvement Initiative appears to have increased the number of eligible members on a beta blocker by approximately 10%.

**LEARNING OBJECTIVES:** Audience participants will:
1. Learn how to develop and implement a pharmacy based quality improvement initiative.
2. Learn how to measure the outcomes of a pharmacy based quality improvement initiative.
3. Learn how to integrate pharmacy and medical databases to establish specific criteria for targeting providers for a quality improvement initiative.