$977, and cardiovascular illness $—35. The incremental cost of diabetes co-occurring with psychosis was significantly higher than all other disease co-occurrences. Differences in the incremental cost of diabetes were not statistically significant between the other disease combinations. ANCOVA was performed with longevity in the program as a covariate to adjust for differential enrollment time. CONCLUSION: The cost and management of chronic conditions such as diabetes may be highly influenced by other chronic conditions the patient may have. Disease management programs may incorporate co-morbidity research and models when evaluating the cost and treatment of chronic conditions.

### A RETROSPECTIVE EVALUATION OF NONSTERoidal ANTI-INFLAMMATory DRUG-INDUCED GASTROINTESTINAL COMPLICATIONS AMONG ADULTS IN A MANAGED CARE HEALTH PLAN

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**OBJECTIVE:** To obtain a profile of adult patients at risk for nonsteroidal anti-inflammatory drug (NSAID) induced gastrointestinal (GI) complications in a large managed care health plan in the Southwest United States. **METHODS:** Patients with NSAID prescription claims between July 1996 and June 1997 were identified from a health plan claims database. Patients with claims associated with ICD-9 and CPT codes indicating serious GI complications were then identified. The ICD-9 codes used were those associated with GI ulcers (531.x, 532.x, 533.x, and 534). A total of 19 CPT codes for GI procedures indicative of a GI complication were used. A forward stepwise logistic regression analysis, using the likelihood-ratio (LR) test, was performed to identify predictors of GI complications. Predictors included in the model were individual NSAIDs and the following potential risk factors: age, gender, previous GI drug usage, previous steroid usage, and total days supply of NSAIDs during the study period. **RESULTS:** A sample of 15,772 patients with prescription claims for NSAIDs was identified. Of these patients, 213 (1.4%) had an ICD-9 or CPT code suggestive of serious GI complications secondary to a NSAID. The logistic regression results indicated that women (OR = 0.65, 95% CI = 0.48–0.87) were less likely to develop GI complications. However, patients with previous GI drug usage (OR = 5.97, 95% CI = 4.51–7.90), those who used ketorolac (OR = 2.01, 95% CI = 1.10–3.67) and those who used oxpazin (OR = 1.82, 95% CI = 1.10–3.00) were more likely to develop GI complications. **CONCLUSION:** Users of ketorolac and oxaprazin, as well as those with previous GI drug usage were at a higher risk, while women were at a lower risk of GI complications in this managed care population.

### DISEASE SEVERITY DETERMINES COST OF GASTROESOPHAGEAL REFLUX DISEASE IN A MIDWEST USA HEALTH CARE PLAN

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**OBJECTIVES:** The primary objective was to describe the cost of illness of gastroesophageal reflux disease (GERD) in a managed care population. Secondary objectives were to characterize GERD costs and to quantify the dependence of costs on disease severity. **METHODS:** This retrospective study utilized claims data from a large (1.4 million lives) Midwest USA health care plan. Study population had complete medical and pharmacy coverage continuously from 1996 to 1998 and possessed at least one medical claim for GERD. Claim costs were compiled for all GERD-attributable medical and drug claims. Costs were also categorized by health care sector, such as hospital inpatient or pharmacy. ICD-9 codes were used to categorize subjects’ GERD into four progressively worse states plus a non-symptomatic state: GERD0 [no GERD claims], GERD1 [mild esophagitis], GERD2 [reflux esophagitis], GERD3 [esophageal ulceration], and GERD4 [strictures and complications]. **RESULTS:** A total of 7,575 subjects meeting the inclusion and exclusion criteria were identified. The median age was 50 and there were 50% females. Over the three year study period, more than $23 million was spent on GERD-related claims, or $86 per subject per month. Pharmacotherapy contributed 31% of GERD health care costs, inpatient hospital charges 37%, outpatient facility charges 26%, and doctor office charges 6%. Mean cost per month was highly dependent on GERD disease state: GERD0 cost $38 per month, GERD1 was $189, GERD2 was $232, GERD3 was $536, and GERD4 was $412. At higher GERD states, pharmacotherapy was a lower contributor to cost. **CONCLUSIONS:** For payers of health care, GERD is an expensive disorder to manage. Overall costs associated with GERD increase with the severity of the disease, although the relative contribution of each health care cost sector changes with disease severity.

### INFECTIOUS DISEASE

**DEVELOPMENT OF A STOCHASTIC DECISION ANALYSIS MODEL OF TREATMENT OF PYELONEPHRITIS FROM THE RESULTS OF AN RCT**


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**OBJECTIVE:** To model the relationship between resistance to trimethoprim sulphasemethoxazole (TMP-SXT)
and outcome of pyelonephritis from an RCT comparing TMP-SXT with ciprofloxacin (Talan, JAMA, 283:1583–1590, 2000). METHODS: In the trial cost analysis was limited to a comparison between the two treatment groups, which did not permit analysis of effect modifiers, such as TMP-SXT resistance. A probabilistic model was developed and distributed were assigned to expected costs and probabilities of cure, failure (persistent or recurrent infection) and superinfection (reinfection with a new organism) from the trial data. These distributions, which characterise the second order uncertainty surrounding these outcomes following the trial, were propagated through the model using Monte Carlo simulation in order to generate cost-effectiveness acceptability curves. RESULTS: There were 255 patients in the per protocol analysis. The mean cost for patients with treatment failure ($476, n = 34) was significantly higher than the cost for patients who were either cured ($307, n = 174) or had superinfection ($325, n = 11). However, treatment with ciprofloxacin reduced both the probability and cost of treatment failure (the mean difference in treatment cost between success and failure was only $4 in the ciprofloxacin arm compared with $267 in the TMP-SXT arm). The probability of ciprofloxacin was dominant (greater efficacy at lower cost) was >95% at 18% TMP-SXT resistance and remained >95% down to a resistance rate of 10%. These results were sensitive to a small number of hospitalisations (1 ciprofloxacin, 5 TMP-SXT). Taking outpatient costs alone, the threshold value of treatment failure at which ciprofloxacin was 90% likely to be cost-effective ranged from $700 for 18% resistance to $350 for 30% resistance. CONCLUSIONS: The stochastic model produces results that are importantly different from a simple analysis based on point estimates of probability and cost, particularly if the latter assumes that the cost of treatment failure is the same for both treatments.

**HEALTH VALUES FOR THE LIPODYSTROPHY SYNDROME**

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BACKGROUND: There is increasing concern about the potential effects of the lipodystrophy syndrome on the health and quality of life of HIV-infected patients. OBJECTIVE: Understand patients’ perception of the significance of the lipodystrophy syndrome’s quality-of-life effects. DESIGN: Cross-sectional study of volunteer HIV-infected patients. SETTING: An urban, university-affiliated HIV clinic in San Diego, California. Patients: 75 well-educated, predominantly male, HIV-infected patients. MEASUREMENTS: Patients’ beliefs about the importance of appearance upon quality of life and preferences for hypothetical states performed using the standard gamble and time trade-off methods. RESULTS: Almost all patients (95%) indicated that appearance was important to their quality of life, and 89% agreed that they would be “really bothered” if their HIV diagnosis were revealed by their appearance. Patients were willing, on average, to give up 2 years (s.d. 2.8), out of a 10-year life-expectancy, to live in good health rather than live with the syndrome, over and above what they would give up to be free of symptoms from HIV infection. Patients would take an additional 13% (s.d. 20%) risk of death to be cured of HIV infection when complicated by the syndrome (median increase in risk, 9%), above the risk they would accept to be cured of uncomplicated HIV infection. The amount that the patients would trade off was associated with beliefs about the importance of their appearance to quality of life (p = 0.0045) and worry that their appearance would expose their diagnosis by (p = 0.032). CONCLUSIONS: The physical effects of the lipodystrophy syndrome are important enough to cause many patients to consider accepting considerable risks of death or trading off substantial life-expectancy to avoid the syndrome. Physicians may need to tailor HIV care to this aspect of patients’ preferences.

**COST-EFFECTIVENESS ANALYSIS OF AN INTRANASAL INFLUENZA VACCINE FOR HEALTHY CHILDREN**

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OBJECTIVE: Intranasal influenza vaccine has proven clinical efficacy and may be better tolerated by young children and their families than an injectable vaccine. This study determined the potential cost-effectiveness (CE) of intranasal influenza vaccine among healthy children. METHODS: The CE analysis included clinical and medical utilization data collected in 1996–8 during a prospective 2-year efficacy trial of intranasal influenza vaccine. These data were supplemented with data from the literature where necessary. The analysis included both direct and indirect costs. The trial enrolled 1,602 healthy children 15–71 months of age in year 1, 1,358 of whom were enrolled in year 2. Children received 1 or 2 doses of either intranasal influenza vaccine or placebo. The main outcome measure was cost per febrile influenza-like illness (ILI) day avoided. The base case assumed that the vaccine was given twice in the first year and once each year thereafter at a total cost of $20 for the vaccine and its administration (i.e. per dose). RESULTS: Vaccinated children had an average of 1.2 fewer ILI fever days over 2 years than unvaccinated children. In an individual-based vaccine delivery scenario, CE was approximately $30/febrile ILI day avoided with the vaccine, and ranged from $10–$59/febrile ILI day avoided at a cost per dose of