OBJECTIVE: To analyze the relationship between comorbid conditions and direct treatment costs for patients diagnosed with migraine in the Taiwan’s National Health Insurance (NHI) system. METHODS: Retrospective analyses on continuously enrolled Individuals diagnosed as having migraine from July 1, 2000 to December 31, 2002 (with 6 months run-in periods and 1-year follow up period) are employed in a NHI claims database. New migraineurs were identified on the basis of ICD-9-CM codes, and direct treatment costs were calculated using Taiwan NHI payments for migraine related medical events by type of medical care. Data on the cost of outpatient care, medications, and inpatient care were collected. Comorbid conditions were based on the diagnostic classifications from the Charlson comorbidity index. The log-transformed direct costs were analyzed by multivariate techniques. Control variables included demographics, type of providers, comorbidities, and follow up periods. RESULTS: Of 24,801 remained patients for study, there were 21,924 (88.4%) migraine alone and 2,877 (11.6%) migraine with comorbid conditions. The differences between migraine with comorbid conditions and migraine alone in total mean costs per patient were NTC2284 during the study period (NTC3737 vs. 1453; p < 0.001). Higher prescription drug costs of NTC3737 higher physician visit costs of NTC581 accounted for most of the difference. The differences in total mean costs per patient between migraine with comorbid conditions relative to migraine alone patients were higher for the 8 most prevalent comorbidities. Higher costs were attributable to higher prescription drug and physician visit utilization. However, differences varied across conditions, ranging from NTC6759 in higher costs for diabetes with chronic complications to NTC156 in higher costs for myocardial infarction. CONCLUSIONS: These results demonstrate costs differences were smaller for acute conditions such as myocardial infarction compared with chronic diseases among comorbid conditions for patients diagnosed with migraine.

TRIPTANS IN THE ACUTE TREATMENT OF MIGRAINE: COST-EFFECTIVENESS ANALYSIS BASED ON NUMBER NEEDED TO TREAT AND DOSES NEEDED TO TREAT
Dugar A, Healey PJ, Weis K
Pfizer Global Pharmaceuticals, Pfizer, Inc, New York, NY, USA
OBJECTIVE: To determine the cost-effectiveness of six triptans in the acute treatment of migraine based on number needed to treat (NNT) and doses needed to treat (DNT) derived from data in a published meta-analysis combined with the wholesale acquisition cost (WAC). METHODS: Efficacy and recurrence data were obtained from a meta-analysis of 5 randomized, double blind, controlled (placebo or active comparator) trials of triptan use in adult outpatients (Ferrari 2001). Triptans studied were: almotriptan 12.5 mg (A12.5), eletriptan 40 mg (E40), naratriptan 2.5 mg (N2.5), razatiprant 5 mg and 10 mg (R5 and R10), sumatriptan 50 mg and 100 mg (S50 and S100) and zolmitriptan 2.5 mg and 5 mg (Z2.5 and Z5). Treatment success was measured by sustained pain-free therapeutic gain (SPFTG), the percentage of patients who were pain-free within 2h post-dose (placebo-subtracted), with no headache recurrence or use of rescue medication within 24h. SPFTG was calculated using the published 2h pain-free and recurrence rates. The NNT and DNT to achieve 100 successfully treated patients were calculated; DNT were divided by the WAC (AnalySource®, September 2003) to obtain cost per successfully treated patient (CPSTP). RESULTS: E40 and R10 had the highest SPFTG (18% and 19%, respectively); N2.5 (11%), S50 (13%) and R5 (13%) had the lowest. E40 and N2.5 had the lowest recurrence rates (21% each); R5 (39%) and R10 (37%) had the highest. E40 and R10 had the lowest DNT (686 and 713, respectively); N2.5 (1094) and R5 (1040) had the highest. CPSTP was lowest for E40 ($86.69), then R10 ($102.32), and was highest for N2.5 ($181.99) and R5 ($149.18). CONCLUSIONS: E40 and R10 had the lowest DNT. E40 was the most cost-effective triptan, followed by R10; N2.5 was the least cost-effective. Results are important for health care decision-makers in the acute treatment of migraine.

COST EFFECTIVENESS ANALYSIS OF INTERFERON BETA-1A (AVONEX®) IN PRE-CLINICALLY DEFINITE MULTIPLE SCLEROSIS (CDMS)
Iskedjian M1, Walker J2, Gray T2, Vicente C2, Einarson T3, Gehshan A4
1PharmDItas Research and Consulting Inc, Oakville, ON, Canada; 2St. Michael’s Hospital, University of Toronto, Toronto, ON, Canada; 3University of Toronto, Toronto, Canada; 4Biogen Idec Canada Inc, Mississauga, ON, Canada
OBJECTIVES: Interferon beta-1a (Avonex®) is efficacious in delaying clinically definite multiple sclerosis (CDMS) following a single demyelinating event (SDE). The purpose of this study was to determine the cost-effectiveness of Avonex® compared to current treatment (CT) in delaying the onset of CDMS. METHODS: A cost effectiveness analysis (CEA) was performed. The outcome of interest was time spent in the pre-CDMS state, termed monosymptomatic life years (MLY) gained. A Markov model was developed with all transitional probabilities derived from the literature. Costs were reported in 2002 Canadian dollars. Costs and outcomes were discounted at 5%. A time horizon of 12 years was applied. All uncertainties were tested via univariate and multivariate sensitivity analyses. RESULTS: From the Ministry of Health (MoH) perspective, the total expected costs per patient were $173,000 and $108,000 for Avonex® and CT, respectively. From the SOC perspective, the total expected costs were $317,000 and $262,000, respectively. Expected MLYs gained were 4.69 for Avonex® and 3.48 for CT. The incremental cost of Avonex® per MLY gained was $53,110 from the MoH perspective and $44,789 from the SOC perspective. The model was sensitive to the probability of progressing to CDMS and the analytical time horizon. CONCLUSION: Our results suggest that Avonex® may be considered as a reasonably cost-effective approach to treatment of patients experiencing a SDE. In addition, the overall incremental cost-effectiveness profile of Avonex® improves if treatment is initiated in pre-CDMS rather than waiting until CDMS.

COST-EFFECTIVENESS OF SCREENING FOR NEUTRALIZING ANTIBODIES TO INTERFERON BETAS IN THE TREATMENT OF MULTIPLE SCLEROSIS
Munschauer F1, Rich S2, Huse DM3
1Jacobs Neurological Institute, Buffalo, NY, USA; 2University of Michigan, Ann Arbor; Mi, USA; 3The MEDSTAT Group, Cambridge, MA, USA
OBJECTIVE: To model the economic implications of screening for neutralizing antibodies (NABB) to interferon beta (IFNβ) in treatment of relapsing-remitting multiple sclerosis (RRMS). There is considerable evidence that NABBs to IFNβ can reduce its clinical efficacy. NABB incidence ranges from 28–47% with IFNβ-1b (Betaseron), 12–24% with IFNβ-1a (Rebif), and 2–6% with IFNβ-1a (Avonex). Early identification of Nab + patients may improve cost-effectiveness of IFNβ therapy. METHODS: A Markov model was constructed to estimate and compare costs and quality of life-related utility of IFNβ therapy. Seven treatment scenarios (Avonex, Betaseron, and Rebif, with and without...
NAb screening, and no therapy) were included in the model. Data from pivotal clinical trials, US product labeling, and other published sources were used to estimate disease progression, relapse rates, treatment efficacy (reductions in relative risk of progression/relapse; effect of NAb on efficacy), adverse events, therapy discontinuation/switching, costs, and patient utilities. For each treatment scenario, incremental cost per QALY was assessed relative to no therapy, and each screening scenario was compared to its corresponding “no screening” scenario.

RESULTS: Incremental cost per QALY (lifetime treatment; 3% discounting) ranged from $75,300 (Avonex) to $135,900 (Betaseron). NAb screening resulted in 10-year cost savings of US$5100 per patient (Rebif) and US$3000 (Betaseron), versus US$800 additional cost for Avonex. CONCLUSIONS: Based on higher occurrence of NAb with Betaseron and Rebif, universal NAb screening of patients treated with these agents improves clinical effectiveness and is cost saving. However, NAb screening for Avonex-treated patients is cost additive due to Avonex’s lower immunogenicity.

PNL11
HEALTH CARE COSTS FOR FLORIDA MEDICAID RECIPIENTS WITH MULTIPLE SCLEROSIS
Boulanger L1, Friedman M1, Dixon D, Menzin J1
Boston Health Economics, Inc, Waltham, MA, USA

OBJECTIVE: To assess health care costs among patients with multiple sclerosis (MS) in the Florida Medicaid program.

METHODS: We employed a retrospective matched cohort design using administrative claims data for Florida Medicaid recipients. Patients were included if they had a diagnosis of MS between July 1, 2001 and June 30, 2002, and were eligible for Medicaid as of July 1, 2001. Those covered in capitated plans or dually eligible for Medicare and Medicaid were excluded. The comparison cohort consisted of MS-free patients matched on age, gender, and race to the MS group. The excess cost of MS (in 2002 US dollars) was estimated as the difference in mean Medicaid payments between the MS group and matched controls. Patients were followed for 12 months unless eligibility terminated earlier. RESULTS: A total of 951 patients with MS met cohort selection criteria, a prevalence rate of approximately 8 per 10,000 Medicaid eligibles. About one-third of these patients were dispensed glatiramer acetate or beta-interferon. MS patients and matched controls (n = 951) averaged 43 years of age; 78% were female, and 61% were white. Both cohorts had similar mean Charlson comorbidity scores and low mortality rates (<3%). Compared to their matched controls, MS patients were more likely to be hospitalized (33% vs. 20%, respectively), use nursing home services (15% vs. 3%), or use home health care services (37% vs. 11%). The annual per-patient excess cost of MS was estimated to be $11,383 ($20,264 vs. $8,881 for matched controls). Long-term care accounted for 44% of the excess costs, followed by medications (28%), and hospitalizations (14%). CONCLUSIONS: Although MS is relatively rare in this Medicaid population, the per-patient costs are high. Long-term care costs are the largest portion of Medicaid payments, highlighting the disease burden.

PNL12
COST UTILITY ANALYSIS OF INTERFERON BETA-1A (AVONEX®) IN PRE-CLINICALLY DEFINITE MULTIPLE SCLEROSIS (CDMS)
Iskedjian M1*, Walker J2, Gray T3, Vicente C1, Enarson T3, Gehshan A4
1Pharmidea Research and Consulting Inc, Oakville, ON, Canada; 2St. Michael’s Hospital, University of Toronto, Toronto, ON, Canada; 3University of Toronto, Toronto, Canada; 4Biogen Idec Canada Inc, Mississauga, ON, Canada

OBJECTIVES: Interferon beta-1a (Avonex®) is efficacious in delaying clinically definite multiple sclerosis (CDMS) following a single demyelinating event (SDE). This study determined the cost-utility of Avonex® compared to current treatment (CT) in delaying the onset of CDMS. METHODS: A cost utility analysis (CUA) was performed. The outcome of interest was the quality adjusted time spent in the pre-CDMS state, termed quality adjusted monosymptomatic life years (QAMLYs) gained. A Markov model was developed with all transitional probabilities and utilities derived from the literature. Costs were reported in 2002 Canadian dollars. Costs and outcomes were discounted at 5%. A time horizon of 15 years was applied. All uncertainties were tested via univariate and multivariate sensitivity analyses. RESULTS: From the Ministry of Health (MoH) perspective, the total expected costs per patient over 15 years were $202,000 and $136,000 for Avonex® and CT, respectively. From the societal perspective, the total expected costs were $380,000 and $327,000, respectively. Expected QAMLYs gained were 8.47 for Avonex® and 8.18 for CT. The incremental cost of Avonex® per QAMLY gained was $227,586 from the MoH perspective and $189,286 from the societal perspective. The model was sensitive to the probability of progressing to CDMS, the utilities, and the analytical time horizon. CONCLUSION: This analysis demonstrates an improvement in the cost utility of Avonex® compared to a previously published CUA for CDMS, providing further evidence of the benefits of treatment following a SDE.

PNL13
A COMPARATIVE COST ANALYSIS OF VASCULAR DEMENTIA VERSUS ALZHEIMER’S DISEASE IN TAIWAN
Lin CW1, Lee CT2
1Bureau of National Health Insurance, Kao-Ping Branch, Kaohsiung City, Taiwan
2Bureau of National Health Insurance, Kao-Ping Branch, Kaohsiung City, Taiwan

OBJECTIVE: To compare the average direct costs for patients diagnosed with vascular dementia (VaD) versus Alzheimer’s disease (AD) from the perspective of the Taiwan National Health Insurance (NHI) program. METHODS: Using health care claims data for NHI recipients in the Bureau of National Health Insurance Kao-Ping Branch, Taiwan, we evaluated NHI expenditures among adults 50 years of age diagnosed with VaD (ICD-9-CM 290.4X) or AD (ICD-9-CM 331.0) between July 1, 2000 and December 31, 2002. Patient’s identification period spanned from Jan 1, 2001 through Dec 31, 2002 with a 6-month baseline periods and 1-year follow up period. Direct costs estimated using NHI physician fee schedules. Health care utilization and NHI expenditures (in 2002 NHI reimbursement prices) were calculated overall and by component of care. Multivariate techniques, based on regression analyses of the log of total costs, were employed to adjust for differences between the study cohorts in sociodemographics. RESULTS: In total, 1450 patients met study inclusion criteria; Of the 710 were diagnosed with VaD, 41.6% were women; Of the 740 with AD, 50.7% were women. The average age for VaD was 76.25 years and 76.79 years for AD. Relative to AD patients, the burden of comorbidity was higher among VaD patients, especially for cerebrovascular disease (43.2% vs. 15.9%), but also for diabetes (5.6% vs. 3.1%) and chronic pulmonary disease (5.5% vs. 1.4%). Mean monthly costs per patient were approximately NT$1107 higher in the VaD cohort (NT$3892 vs. 2785; p < 0.001). Most of this excess cost was attributed to higher inpatient utilization (84.8%) and mental health services (11.2%). Adjusting for difference in age, gender, and comorbid conditions between the two cohorts, mean monthly cost per patient were about NT$1107 higher in the VaD cohort (NT$3892 vs. 2785; p < 0.001). CONCLUSIONS: Relative to AD patients, VaD have sig-