

prevalence rates in different populations were weighted to estimate the 2002 annual schizophrenia prevalence in the general US population. **RESULTS:** The annual prevalence rate of schizophrenia in the US in 2002 was estimated at 0.5%. The Medicaid population was identified as having the highest schizophrenia prevalence rate in the US (1.7% for non-Medicare dual eligible enrollees), whereas annual schizophrenia prevalence rates in Medicare and privately insured population were 0.7% and 0.1%, respectively. The disease was also more prevalent in the uninsured population (1.1%). **CONCLUSIONS:** The results suggest that schizophrenia may be more prevalent in the US general population than previously estimated in some epidemiology survey studies, especially given the fact that claims database analyses usually provide lower bounds of prevalence estimates. Schizophrenia is most prevalent in the low income and uninsured populations than in the privately insured or Medicare populations. Given the high cost of the disease, efforts should be made to reach patients in these populations to deliver appropriate treatments.

## PMH50

#### A PSYCHIATRIC HOSPITAL REVENUE AND PROFITABILITY MODEL FOR THE TREATMENT OF PATIENTS WITH SCHIZOPHRENIA IN JAPAN

Makino K<sup>1</sup>, Matsushita T<sup>2</sup>, Davey P<sup>1</sup>, Narita M<sup>2</sup>, Mori S<sup>2</sup>, Kimuro Y<sup>2</sup>

<sup>1</sup>Medical Technology Assessment Group Pty Ltd, Sydney, NSW, Australia; <sup>2</sup>Eli Lilly Japan K.K, Kobe, Hyogo Prefecture, Japan

**OBJECTIVE:** To investigate the impact of inpatient versus outpatient treatment of schizophrenia on psychiatric hospital profitability in Japan. This is a timely investigation because one of the Japanese Government's current objectives is to shift treatment of schizophrenic patients from the inpatient to the outpatient setting. **METHODS:** The investigators accessed schedules of hospital reimbursement in Japan and met with a group of Japanese private hospital owners to gain a sound understanding of costs and income of private psychiatric hospitals. An interactive model was then built which allowed quantification and simulation of profitability of inpatient versus outpatient treatment. The model will be supplied to hospital owners in Japan so that they can assess the profitability of different treatment settings for their hospital. **RESULTS:** The preliminary analysis using the model found that revenues were higher if patients were treated in the inpatient setting, compared with the outpatient setting. In a typical hospital, approximately 21–24 outpatients are required to generate a similar income to that earned from treatment of one inpatient. In order to achieve this, hospitals would be required to expand their outpatient care capacity and improve the quality of outpatient care. **CONCLUSIONS:** Shifting the treatment of patients from the inpatient to the outpatient setting will require a significant expansion of the current outpatient care capacity. Further improvement in the quality of outpatient care will be necessary to attract more patients to compensate for the revenue loss associated with the shift. The project demonstrates the complexities of undertaking financial analysis in Japan. While it is possible to conduct such projects, researchers need to explore a range of data options and consult widely with the intended user.

## PMH51

#### COST-EFFECTIVENESS EVALUATION OF LONG-ACTING RISPERIDONE

Locklear J<sup>1</sup>, Edwards N<sup>2</sup>, Rupnow MF<sup>1</sup>, Diamond R<sup>3</sup>

<sup>1</sup>Janssen Medical Affairs, LLC, Titusville, NJ, USA; <sup>2</sup>Health Services Consulting, Inc, Boxborough, MA, USA; <sup>3</sup>Department of Mental Health of Dane County, Madison, WI, USA

**OBJECTIVES:** To assess the cost-effectiveness of long-acting risperidone (LAI-RIS), oral risperidone (RIS), olanzapine (OLA), quetiapine (QUE), ziprasidone (ZIP), aripiprazole (ARI), and haloperidol decanoate (HAL-DEC) in patients with schizophrenia over one-year from a health care system perspective. **METHODS:** Published medical literature, an unpublished consumer health database, and a clinical expert panel were utilized to populate a decision tree model. The model captured rates of compliance and relapse, frequency and duration of relapse, adverse events, resource utilization and unit costs. Outcomes included percentage, number and duration of relapses per patient per year and direct medical costs. **RESULTS:** The mean days of relapse requiring hospitalization per patient per year were 28 HAL-DEC, 18 RIS, OLA, QUE, ZIP and ARI, 11 LAI-RIS, while the mean days of exacerbation not requiring hospitalization were eight HAL-DEC, five RIS, OLA, QUE, ZIP and ARI, three LAI-RIS. Direct medical cost savings with LAI-RIS compared to RIS, OLA, QUE, ZIP, ARI, and HAL-DEC were \$161, \$1425, \$508, \$259, \$1068, and \$8224, respectively. **CONCLUSIONS:** Long-acting risperidone may lead to substantially lower rates and fewer days of symptom exacerbation and hospitalization compared to currently available treatments. These lower rates translate into direct medical cost savings with the use of long-acting risperidone.

## PMH52

#### THE COST OF RELAPSE IN SCHIZOPHRENIA IN THE UNITED STATES

Ascher-Svanum H<sup>1</sup>, Zhu B<sup>1</sup>, Faries DE<sup>1</sup>, Jiang Q<sup>1</sup>, Salkever D<sup>2</sup>, Slade E<sup>3</sup>

<sup>1</sup>Eli Lilly and Company, Indianapolis, IN, USA; <sup>2</sup>Johns Hopkins University, Baltimore, MD, USA; <sup>3</sup>University of Maryland, Baltimore, MD, USA

**OBJECTIVES:** To compare the direct annual mental health cost and the cost of service components for schizophrenia patients who relapsed with patients who did not relapse. **METHODS:** Data were drawn from a large multi-site three-year prospective naturalistic study of patients treated for schizophrenia in the United States, conducted between July, 1997 and September, 2003. Relapse was defined as psychiatric hospitalization, use of emergency services, use of crisis beds, or suicide attempts. Relapse-related and other service utilization was based on patients' medical records and patients' self-reports, collected at enrollment and at six-month intervals thereafter. Costs (charges) were based on the treatment sites' medical information systems. Propensity score adjusted bootstrap resampling was used to compare the total one-year mental health cost and cost of service components for patients who relapsed with those who did not relapse. **RESULTS:** Patients who relapsed (20%, or N = 310/1557) incurred significantly higher mental health cost during the following one-year as compared to patients who did not relapse (\$33,296 vs. \$11,823 p < 0.01). In addition to higher cost of acute care services (e.g., psychiatric hospitalizations and emergency services), the relapsed patients also had significantly higher cost of day treatment (\$1816 vs. \$1510, p < 0.01), medication management (\$1436 vs. \$1125, p < 0.01), outpatient individual therapy (\$1987 vs. \$1088, p < 0.01), and case management (\$1406 vs. \$907, p < 0.01). The cost of all psychotropic medications was numerically but not statistically higher (\$5646 vs. \$4611, n.s.), reflecting a numerically higher cost of antipsychotics (\$4313 vs. \$3636, n.s.), and of other psychotropic agents (\$1333 vs. \$976, n.s.). **CONCLUSIONS:** Relapse of patients with schizophrenia is associated with substantial direct mental health costs. Findings highlight the economic impact of relapse and the importance

of selecting treatment options that may help reduce the risk of relapse.

**PMH53****DIRECT HEALTH CARE COSTS OF SCHIZOPHRENIA IN THE UNITED STATES: 2002**

Wu EQ<sup>1</sup>, Birnbaum H<sup>1</sup>, Kessler R<sup>2</sup>, Beaulieu N<sup>1</sup>, Daher M<sup>1</sup>, Aggarwal J<sup>1</sup>, Ascher-Svanum H<sup>3</sup>, Shi L<sup>3</sup>

<sup>1</sup>Analysis Group, Inc, Boston, MA, USA; <sup>2</sup>Harvard Medical School, Boston, MA, USA; <sup>3</sup>Eli Lilly and Company, Indianapolis, IN, USA

**OBJECTIVES:** This study quantifies direct health care costs of schizophrenia patients in the US in 2002, as compared to a demographically matched control sample. **METHODS:** Annual excess health care costs of patients with schizophrenia were estimated for both privately and publicly insured patients. Costs were estimated using insurance and patient out-of-pocket payment for patients with at least one schizophrenia diagnosis. Patients were identified from two databases: a de-identified employer claims database of ~3.0 million beneficiaries (1999–2003) for privately insured patients (n = 1,090), and Medi-Cal paid claims (2000–2003) for Medicaid patients (n = 14,074). Medicare costs were imputed using Medicare/Medi-Cal dual eligible patients (n = 6887). Non-schizophrenia controls were randomly matched to schizophrenia patients in a 3:1 ratio, by demographic characteristics (i.e., age, gender, region of residence). Excess costs were estimated by comparing the costs of schizophrenia patients to those of controls. Costs were adjusted to 2002 dollars using the Medical Care CPI. California Medicare and Medicaid beneficiary costs were extrapolated to the U.S. using published per enrollee costs. Schizophrenia prevalence was based on analysis of the National Comorbidity Survey Replication (NCS-R) and other epidemiological literature. **RESULTS:** The total excess health care costs of the schizophrenia population were estimated at about \$16.3 billion, with \$7.2 billion from outpatient costs, \$4.6 billion from drug costs, \$2.6 billion from hospital inpatient costs, and \$1.9 billion from long term care costs. **CONCLUSIONS:** A comparison of these results with previous schizophrenia studies suggests a shift from inpatient to outpatient and drug costs in the past decade. Since 1991, the proportion of total direct health care costs attributable to inpatient services decreased by approximately 40%. The proportion of costs attributable to drugs and outpatient costs increased by approximately 28% and 37% respectively. This shift suggests that new effective pharmaceuticals may lead to potential cost savings through avoiding expensive hospitalizations.

**PMH54****DIFFERENTIAL RISKS AND ASSOCIATED COSTS OF HOSPITALIZATION DURING ANTIPSYCHOTIC TREATMENT IN MEDICAID PATIENTS WITH SCHIZOPHRENIA**

Gianfrancesco F<sup>1</sup>, Pesa J<sup>2</sup>

<sup>1</sup>HECON Associates, Montgomery Village, MD, USA; <sup>2</sup>AstraZeneca LP, Wilmington, DE, USA

**OBJECTIVES:** This retrospective claims-based study compared atypical antipsychotics to typical antipsychotics and to each other with respect to risk of hospitalization and inpatient costs among Ohio Medicaid patients with schizophrenia. **METHODS:** Relative risks of hospitalization for mental illness between enrollees with diagnosed schizophrenia treated with any of the atypical antipsychotics (risperidone, olanzapine, quetiapine, ziprasidone) or any of the leading traditional antipsychotics (haloperidol, perphenazine, thioridazine, thiothixene) were assessed. Cox proportional hazard regression controlled for age, gender, diagnosis, prior hospitalization and ER use, substance

dependence/abuse, antipsychotic dose, use of other psychotropics, and other health needs. Differences in length of stay and inpatient costs (charges) were also assessed. **RESULTS:** Patients treated with quetiapine had a 33% lower risk of hospitalization for mental illness compared with patients treated with typical antipsychotics (HR 0.672; P = 0.0413), equating to \$389 lower expected annual inpatient charges per patient for quetiapine. Other pair-wise comparisons of antipsychotic-related hospitalization were not statistically significant. Risperidone was associated with significantly longer hospital stays than the typicals (1.78, P = 0.0301), resulting in \$303 higher expected annual inpatient charges per patient. Risperidone also had significantly longer lengths of stay than olanzapine, 1.88 days (P = 0.006), resulting in higher inpatient charges (\$320 annual per patient). Other differences in length of stay were not significant at P < 0.05. **CONCLUSIONS:** Quetiapine was associated with a lower risk of hospitalization for mental illness compared with typical antipsychotics, resulting in substantially lower inpatient charges. While risperidone may also have a lower risk of hospitalization than the typicals (22% lower, ns P = 0.0932), length of stay was significantly longer, contributing to higher inpatient charges. Risperidone also had significantly longer lengths of stay than olanzapine with associated higher inpatient costs, and may also have longer stays than ziprasidone (3.61 days, ns P = 0.0619).

**PMH55****CLASSIFYING ANTIPSYCHOTIC ADHERENCE USING LATENT CLASSES ANALYSIS: CHARACTERISTICS OF NON-ADHERENT CASEMIX IN THE CALIFORNIA MEDICAID (MEDICAL) PROGRAM**

Ahn J<sup>1</sup>, McCombs JS<sup>1</sup>, Jung C<sup>1</sup>, Croudace TJ<sup>2</sup>, McDonnell D<sup>3</sup>, Ascher-Svanum H<sup>3</sup>, Edgell E<sup>3</sup>, Shi L<sup>3</sup>

<sup>1</sup>University of Southern California, Los Angeles, CA, USA; <sup>2</sup>University of Cambridge, Cambridge, UK; <sup>3</sup>Eli Lilly and Company, Indianapolis, IN, USA

**OBJECTIVES:** Patient adherence to medications can be improved by proper identification of patients at risk for non-adherence. This study aims to classify patients to latent non-adherence casemix classes varying in degree of adherence, and to examine the socio-demographic and clinical correlates of class memberships. **METHODS:** We used patients (n = 36,195) with a schizophrenia diagnosis from the 100%-sample Medi-Cal fee-for-service paid claims data (1999–2003). The date of the first antipsychotic medication (index date) was used to define a 6-month pre-index and a 12-month post-index periods. Latent class analysis was applied to four categorical adherence indicators: a dichotomous variable derived from medication possession ratio (MPR; cut-off = 0.8); number of treatment attempts (1, 2, 3, 4, > 4), duration of uninterrupted therapy (<30, 30–60, 60–120, 120–240, 240–365, >365 days); and time to first switching of medication (no switching, <30, 30–90, 90–180, 180–365 days). Determinants and consequences of non-adherence were examined by profiling each latent class in terms of covariates and utilization outcomes. **RESULTS:** Models with up to five classes were explored, leading to a final selection of three classes: adherent (prevalence 14.9%), partially adherent (28.1%) and non-adherent (57.0%) based on the smallest classification error (2.14%). Non-adherent class was associated with minority ethnicity, more suicide attempts, more hospitalizations and inpatient rehabilitations than other classes. Partially adherent class displayed higher outpatient care use, higher depot antipsychotic drugs, and higher rate of polypharmacy. Adherent class displayed the exact opposite characteristics as non-adherent class. Total costs in the 12-month follow-up period were \$9,370