(Boostrix) is now available. The goal of this effort was to evaluate its cost-effectiveness.

**METHODS:** A literature-based model was developed to quantify the clinical and economic costs and benefits of vaccinating parents with Boostrix following the birth of their first child. The model projected and compared the number of adult infections avoided in two hypothetical cohorts (one with and one without vaccination) of one million parent couples over 10 years. The model also quantified the number of pediatric infections avoided due to reduced infectivity of vaccinated parents.

**RESULTS:** Immunization with Boostrix led to the following projected discounted benefits: avoidance of 1,178 pediatric and 44,264 adult pertussis infections, 1.3 pediatric encephalopathy cases, 0.4 pediatric chronic brain damage cases, and 1.4 pediatric deaths. Vaccination led to reductions in direct medical interventions, valued at $15.2 million, and prevented lost productivity, valued at $28.9 million, for a total savings of $44.1 million. Including the cost of vaccination of $20.0 million ($10 per adult), the net discounted savings of vaccination was estimated at $24.1 million. The largest cost savings were due to adult outpatient cases avoided (78%) and total (adult and pediatric) hospital stays avoided (13%). The program amounts to a net savings of $12.07 per vaccinee. In univariate sensitivity analyses in which each model input was varied by ±25 percent, the net savings per vaccinee ranged from $5.14 to $18.99.

**CONCLUSIONS:** In this model, vaccinating young parents with Boostrix appears to be a cost-saving preventive measure. Driving this result is the large cost savings attributable to far fewer adult outpatient pertussis cases.

**DIRECT MEDICAL COSTS OF MANAGING AN EPISODE OF RESPIRATORY SYNCTIAL VIRUS (RSV) COMMUNITY ACQUIRED PNEUMONIA (CAP) IN U.S. ADULTS**


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**OBJECTIVES:** Millions of cases of CAP are reported in the US annually. The cause can be bacterial or viral. RSV is one cause being examined more closely in adults, specifically in the elderly. This study estimates the direct medical costs of treating an episode of RSV-related CAP in adults (age ≥18 years).

**METHODS:** Cases were identified by principal ICD-9 diagnosis code. Residential care facility patients were excluded. As few RSV cases (ICD-9 480.1) could be identified, they were combined with cases of viral CAP, pathogen unspecified (ICD-9 480.9) to form the RSV group. Resource use and cost profiles for inpatient and outpatient management were developed and weighted to determine a mean overall episode cost. The inpatient cost profile was comprised of hospital, post-discharge care and readmissions within 60 days of CAP diagnosis. Inpatient costs and discharge patterns were based on discharge data from five US states. State ambulatory care and emergency room databases were primary sources for outpatient profiles. Inpatient versus outpatient management proportions were derived from literature. Cost estimates are reported in 2001 US$. Charges were adjusted by means of a cost-to-charge ratio.

**RESULTS:** Of the 1,968 RSV CAP inpatient cases identified, 58% were ≥65 years old. The mean length of stay was 5.6 days. The mean episode cost for those treated as inpatients was $13,187. Hospital-related costs comprised 75% ($9,939) of that cost. The typical cost of outpatient management was $550. On average, those treated initially as outpatients but subsequently hospitalized accrued $13,888 per person. The mean overall cost for an RSV-related CAP episode was $3,194.

**CONCLUSIONS:** RSV-related CAP cases managed as inpatients are substantially more costly. Initiatives to treat more patients as outpatients should lead to lowering the overall episode cost. These costs provide valuable inputs for economic analyses of viral CAP-related vaccines and treatments.

**EVALUATION OF THE COST-EFFECTIVENESS OF AZITHROMYCIN VERSUS AMOXICILLIN, AMOXICILLIN/CLAVULANATE, AND CLARITHROMYCIN FOR THE TREATMENT OF ACUTE SINUSITIS IN A LARGE MANAGED CARE DATABASE**

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**OBJECTIVES:** Acute and chronic sinusitis is the fifth most common diagnosis for which antibiotics are prescribed, accounting for direct annual costs of more than $3.3 billion in the U.S. The objective of this study was to evaluate antibiotic prescribing patterns in acute sinusitis and compare the effectiveness and associated resource utilization of azithromycin versus amoxicillin, amoxicillin/clavulanate, and clarithromycin.

**METHODS:** Between February 1, 1999 and May 31, 2000, patients with an ICD-9 code for their first hospital or outpatient acute sinusitis visit receiving antibiotic therapy within 5 days of diagnosis were selected from a managed care database and evaluated for inclusion in the analysis. Clinical outcomes and total resource utilization were assessed over a 30-day period in patients meeting eligibility criteria. Clinical outcomes were defined as: a) cured for patients receiving only one antibiotic, b) improved for patients receiving a second course of the initial antibiotic, and c) failed for patients receiving a second course of a different antibiotic or hospitalized for a respiratory tract infection.

**RESULTS:** A total of 27,087 eligible patients received 28,537 initial antibiotic prescriptions for acute sinusitis. Azithromycin (17%) was the second most commonly
prescribed antibiotic preceded by amoxicillin (31%), and followed by amoxicillin/clavulanate (12%) and clarithromycin (7%). Efficacy amongst comparators was similar; although azithromycin treated patients had the highest percentage of cures (86%) and fewest failures (9%). Amoxicillin/clavulanate (83%) had the fewest cures and clarithromycin had the most failures (11%). Azithromycin was $35 more expensive than amoxicillin with a total mean cost of approximately $141 compared to clarithromycin and amoxicillin/clavulanate, which were $80 and $89 more expensive than amoxicillin ($106), respectively. In contrast to amoxicillin/clavulanate and clarithromycin, pharmacy claims accounted for <50% of amoxicillin and azithromycin total costs. CONCLUSIONS: With comparable efficacy and resource utilization advantages versus amoxicillin/clavulanate and clarithromycin, this study suggests azithromycin was the most cost-effective brand antibiotic.

### INCIDENCE AND RELATED HEALTHCARE RESOURCE USE OF RESPIRATORY SYNCYTIAL VIRUS (RSV) INFECTION IN A HIGH-RISK ADULT POPULATION: A CLAIMS DATABASE ANALYSIS

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RSV is the most common cause of respiratory diseases in children under age two worldwide. However few studies have addressed the epidemiology and economic burden of this infection in adults. The elderly, institutionalized individuals and those with chronic cardiopulmonary disease (COPD, asthma, CHF) are at high-risk for RSV infection.

OBJECTIVES: To estimate the incidence of RSV infection, and describe healthcare resource use in a high-risk adult population.

METHODS: A subset of the pharmetrics database (an insurance administrative claims database) containing records on 2.3 million patients from four large insurance plans was utilized for this analysis. Adult subjects with COPD, asthma or CHF claims in 1996 and 1997 were enrolled and followed from January 1st 1998–May 31st 2001 (observation period) for new RSV diagnoses.

RESULTS: A total of 16,806 subjects (contributing 27,698.4 person-years) were studied. Sixty subjects with RSV infection (RSV cohort) were identified during the observation period. The incidence rate was 216.6 cases/100,000 person-years (95% CI 166.8–277.1). Of the covariates of interest at enrollment (age, gender, other comorbidity, steroid and oxygen use), only older age was associated with RSV infection (P < 0.0001). The proportion of subjects hospitalized for CHF/FOPD/asthma was higher in the RSV cohort after controlling for age, gender and comorbidity (57% vs. 28%, P = 0.0005). A similar difference was found for ICU admission (7% vs. 2%, P = 0.013). The median hospitalization cost in the RSV cohort was $9,592.26, compared to $5,899.04 (P = 0.039). Outpatient visits and drug utilization were not significantly different between the groups. CONCLUSIONS: This incidence rate may represent an underestimation of the true RSV incidence as a result of under-diagnosis in adults and lack of treatment options. Nevertheless RSV infection in this population may represent an under appreciated cost burden to the healthcare system. New diagnostic aids and treatment options are needed to address this unmet medical need.

### LONG-TERM ECONOMIC CONSEQUENCES OF ORGAN DYSFUNCTION FOLLOWING HOSPITAL DISCHARGE OF SEPSIS PATIENTS

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While the hospitalization costs of severe sepsis have been estimated, the long-term economic consequences of sepsis survivors may be of greater importance to healthcare decision-makers.

OBJECTIVES: The objective of this study is to estimate and compare the long-term healthcare cost for patients following discharge from a hospitalization for sepsis or severe sepsis.

METHODS: This retrospective database study used managed care claims data from 1995 to 1998 to identify patients greater than 18 years of age with an ICD-9 code indicating septicemia or bacteremia during a hospitalization. Patients who experienced any signs of organ failure during the index hospitalization as indicated by ICD-9 codes comprised the severe sepsis group; the remaining patients comprised the sepsis group. The index hospitalization was defined as the hospitalization containing the first sepsis or severe sepsis diagnosis during the above timeframe. Patients were excluded if they did not have any claims following hospital discharge. Log-transformed monthly healthcare expenditures were analyzed using analysis of variance. The propensity score method using 5 subclassifications was used to make both groups (sepsis and severe sepsis) comparable, reducing the bias in the analysis.

RESULTS: Of approximately 3 million members in the database, 3,403 patients met the inclusion criteria with 2,666 (78.3%) in the sepsis group and 737 (21.7%) in the severe sepsis group. The adjusted mean monthly cost after discharge from the index hospitalization was $496.63 (95%CI: $466.23–$529.01) for the sepsis group and $571.29 (95%CI: $506.87–$643.89) for the severe sepsis group. Severe sepsis patients were 15.0% (p = 0.043) more costly than the sepsis patients.

CONCLUSION: Interventions aimed at reducing the likelihood of disease progression from sepsis to severe sepsis are likely to have beneficial long-term economic consequences for patients and healthcare systems.