years at a rate of 6.9 visits/1000 persons annually (95% CI: 5.1, 8.7) compared to children 5–17 years at 8.5 visits/1000 persons annually (95% CI: 5.6, 11.3). Visits to office-based physicians, hospital emergency departments and outpatient departments accounted for 85%, 11% and 5% of visits, respectively. Antibiotics were prescribed at 2.5 million visits (38% of encounters) at an estimated cost of $93 million. Broad-spectrum antibiotics prescribed at 39% of visits where an antibiotic was prescribed accounted for $59 million of the total cost for antibiotics. Combined visit and antibiotic costs for the group totaled $441 million. CONCLUSIONS: Prescribing of antibiotics for influenza is widespread, increases medical costs and may contribute to antibiotic resistance. Increased use of vaccination and viral testing could reduce antibiotic use and result in cost savings.

**COSTS AND OUTCOMES OF EXTENDED-RELEASE CLARITHROMYCIN FOR LOWER RESPIRATORY TRACT INFECTIONS**

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OBJECTIVES: To evaluate the costs and outcomes of extended-release clarithromycin versus clarithromycin immediate-release for outpatients with bacterial lower respiratory tract infections (LRTIs, community-acquired pneumonia and acute exacerbations of chronic bronchitis). METHODS: We developed a decision-analysis model comparing extended-release clarithromycin with immediate-release for LRTIs. Treatment success and adverse event (AE) rates were derived from weighted averages of published studies that included dichotomous variables for cure vs. failure (16 immediate-release studies, 4 extended-release). Costs were standard US values. The model included the acute antibiotic treatment period (start of first-line therapy through completion of second-line therapy, if applicable). The model measured the proportion of patients cured on first- and second-line therapy, patients discontinuing due to AEs and lack of efficacy, and physician, antibiotic, and total costs per episode. RESULTS: More patients achieved clinical cure with clarithromycin extended-release (83.9%) than with clarithromycin immediate-release (72.8%); AE discontinuation rates were lower for the extended-release group (2.4% versus 4.9% for the immediate-release group). Total costs with clarithromycin extended-release were $32 (16%) less than total costs for immediate-release. Sensitivity analyses indicated that the model is robust to changes in cure and AE discontinuation rates within reasonable ranges. Conclusions: Clarithromycin extended-release is cost saving compared with clarithromycin immediate-release for LRTIs, using base-case results. The model did not include hospitalization, which is uncommon in mild to moderate LRTIs; addition of hospitalizations is likely to demonstrate additional costs savings with clarithromycin extended-release. These differences in clinical and economic results are important in that extended-release therapy can lead to improved patient outcomes with decreased costs. Further research is needed to determine the cause and impacts of these differences in efficacy and tolerability.

**MENINGOCOCCAL VACCINE IN PORTUGAL—A COST-EFFECTIVENESS ANALYSIS**

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OBJECTIVE: To do a cost-effectiveness analysis of the introduction of meningococcal vaccine type C (NeisVac-C™) in Portugal. METHODS: Model: The study compared vaccine with no vaccination for a cohort of 100,000 for lifetime using a Markov model. Scenarios for age of vaccine administration: children with less than one year of age, children with one year of age and children with two years of age. The outcomes measured were avoidable cases, avoidable death, avoidable disability and avoidable years of life lost. RESULTS: For the case base studied the cost per year of life gained (or lost year of prevented life) for the NeisVac-C™ was €6372 for vaccination administer after the first year of life and of €12,635 for vaccination administer during the first year of life. Difference is explained by the need of two doses of vaccine during the first year of life and only one for the other scenario. These costs includes the cost of vaccines, the effect and consequences of vaccines in the consumption of resources of the health system (hospital, outpatients, medicines, exams, etc.), direct costs for the State other than of the health system (support of the Social Welfare and the deficient ones) and the indirect costs generated by the effect of the disease in the productivity lost by the families in the case of children or of the self in the case of disease while in active labor age. Sensitivity analysis showed the robustness of these values. CONCLUSIONS: Compared with other interventions routinely done by the National Health Service the administration of the of the NeisVac-C™ it can be considered cost-effective for the Portuguese population.

**THE IMPACT OF PHYSICIAN PROFILING ON ANTIBIOTIC COST AND UTILIZATION**

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OBJECTIVE: This study examines the benefit of physician profiling on cost and utilization of antibiotics. METHODS: General Practitioners, Family Practitioners, Internists and Pediatricians were sent an education tool regarding the appropriate use of antibiotics for the treatment of respiratory illnesses for the 2000–01, 2001–02 and 2002–03 seasons. Physicians who prescribed greater than 60 antibiotics in the previous year also received a profile of their first line antibiotic use. The average ingredient cost per prescription for profiled vs. non-profiled physicians was used to determine the impact of physician profiling on antibiotic prescribing behavior. Physicians were also surveyed during the 2000/01 season on the usefulness of the education tool and the profile. RESULTS: Approximately seventeen thousand physicians were targeted for each season. The ingredient cost per prescription for first line antibiotics was significantly lower for profiled (N = 3286) vs. non profiled physicians in all three seasons: $5.19 vs. $5.31 (p < 0.0001) for season 1; $6.29 vs. $6.57 (p < 0.0001) for season 2; and $8.39 vs. $8.57 (p = 0.0003) for season 3. The ingredient cost per prescription was also lower for second line antibiotics in the profiled vs. non-profiled groups for each consecutive season: $5.35 vs. $6.09 (p = 0.057), $6.53 vs. $7.35 (p < 0.0001), and $6.58 vs. $7.22 (p = 0.0001), respectively. Out of the 4.1% of physicians who responded to the program survey, 84% agreed that the information in the education tool was informative and useful.
eight percent would consider the information when prescribing. Seventy-five percent of the profiled physicians who responded agreed that the profiles were informative and useful, and 67% would consider the information in their prescribing decisions.

CONCLUSION: Providing antibiotic prescribing profiles for physicians may influence prescribing patterns and maintain cost in a managed care setting.

MEDICOECONOMIC EVALUATION OF OUTPATIENT MANAGEMENT OF INFANTILE BRONCHIOLITIS IN FRANCE

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OBJECTIVES: To compare—in terms of effectiveness and costs—outpatient management of infantile bronchiolitis by homeopathic GPs vs allopathic GPs vs paediatricians.

METHODS: A 6-month prospective, “real-world” study was carried out by setting up 3 observatories with: homeopathic GPs, allopathic GPs and paediatricians recruited by sample-drawing.

Patients aged between 3 and 24 months, consulting for first bout of acute bronchiolitis since birth, who had not yet received treat- ment and who did not require immediate hospitalisation were included. Effectiveness (number and duration of bouts, number of complications, persistence of bronchial obstruction), direct medical costs (from the French Health Insurance and societal perspectives) and indirect costs (sick leaves) were assessed. The statistical analysis was performed after matching patients to have comparable patients.

RESULTS: One hundred seventeen, 150 and 253 patients were respectively included by 38 homeopathic GPs, 59 allopathic GPs and 95 paediatricians. At the end of the study, there were: no significant differences between the management by homeopathic GPs vs allopathic GPs vs paediatricians; no significant differences between the management by homeopathic GPs vs paediatricians in terms of number of bouts, persistence of bronchial obstruction but significant shorter duration of bouts (4.4 vs 6.6 days) and less complications (0.20 vs 0.40 complication/patient) in the homeopathic group. In Health Insurance perspective, the management by homeopathic GPs was significantly less expensive than the management by allopathic GPs and paediatricians (116, 146, 217 €/patient respectively). In the societal perspective, the management by homeopathic GPs was significantly less than the management by paediatricians (215 vs 361 €/patient) but equivalent to the management by allopathic GPs. Homeopathic GPs prescribed equivalent number of sick leaves to paediatricians but significantly less than allopathic GPs.

CONCLUSION: These results could help public policy makers and practitioners in providing new available data concerning the outpatient management and cost of infantile bronchiolitis, that is a public health concern in France.

THE ECONOMIC EVALUATION OF INFLUENZA VACCINATION IN THE ELDERLY POPULATION: A MODEL BASED ON BAYESIAN NETWORKS

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OBJECTIVES: Influenza infection is a major cause of illness, morbidity and mortality throughout the world, mainly among the elderly. Since vaccination has proven to be effective in the reduction of all acute complications, deciding whether to implement a vaccination campaign, and which vaccine(s) to prescribe is an important task. The aim of this work is to build a decision model, which allows the decision-makers to evaluate the possible results under different scenarios, and to choose the decision associated to the highest expected utility, in terms of incremental cost effectiveness ratio (ICER).

METHODS: The analysis is based on the Bayesian Networks. We developed a network that combines information from an observational study conducted in Pianiga (Italy) from a group of GPs (Family Medicine Group), with literature and experts data. This information was used to create a graph model, which encodes the set of conditional independencies among the variables. The probabilities of the relevant events (mortality and resources consumption) are calculated using the network. A (dis)utility function, represented by direct costs, is associated to the decision of implementing or not the vaccination campaign with a given vaccine. The ICER is then derived for several possible scenarios.

RESULTS: The MF59 vaccine proves to be more cost-effective, as compared to both the non-vaccination and the standard vaccine. This result is consistent through several scenarios, built upon varying parameters such as coverage and attack rates. In the basic scenario, obtained by observed data, MF59 allows a saving of 16,444 € per death averted, with respect to standard vaccine, and a saving of 2718 € per death averted as compared to non vaccination.

CONCLUSIONS: Using Bayesian Networks can help structure the decision problem and allow for a direct multivariate stochastic sensitivity analysis. The use this tool is in our opinion highly valuable, yet not established, in health economics.

OBSERVATIONAL STUDY ON THE “REAL LIFE” PRACTICE AND COST OF ANTIBIOTIC (AB) MEDICATION IN PNEUMOCOCCAL PNEUMONIA PATIENTS: PARENTERAL VERSUS STEP DOWN THERAPY (SDT)

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OBJECTIVES: In this observational study, we analyzed the minimum basic data sets (MBDS) together with the associated medication costs, relating to stays from 11 hospitals. We focused on Pneumonia stays considering the effect of antibiotic treatment (SDT versus parenteral therapy), stay parameters and patient characteristics on length of stay (LOS) and the resulting antibiotic national insurance cost.

METHODS: Belgian hospitals register case mix data for admissions in MBDS: we extracted anonymous medical data and prescribed drug cost data from stays of 11 peripheral Flemish hospitals (during 2001). MBDS contains ICD-9-CM codes and performed procedures as well as other stay parameters (severity, risk of mortality, LOS), patient characteristics (age, gender) and drug utilization data. Data were stored in MS Access 2000 and analyzed in SPSSWIN 12.0. Stays were considered independent; LOS and cost data were log transformed to obtain homoscedasticity.

RESULTS: The database contained 302,704 patient stays: 6742 relate to pneumonia. Pneumococcus pneumonia was reported in 472 stays (461 patients). Mean (SD) LOS was 16.3 (21.9) days; 89 % of the admissions were unscheduled. Mortality was 8.1 %. The frequency of antibiotic use was: Amoxicillin-Clavulanate 63.9 %, cefalosporins third generation 30.8 %, quinolones 16.8 %, cefalosporins second generation 15.7 %, macrolides 15.7 %, aminoglycosides 15.3 %. In 48.9 % one, in 25 % two and in 12 % three AB-classes were administered. 37.7 % SDT therapy was used. LOS was unaffected by SDT but there was a significant effect (p < 0.001 Anova) of age, stay severity and the