in terms of health outcome as well as in terms of cost for high-risk patients from the perspective of the individual patient as well as of the health care payer. However, this effect is sensitive to time of treatment start, diagnostic certainty as well as rates for hospitalisation, complication and mortality.

**PIN 17**

**COST-EFFECTIVENESS OF 23-VALENT ANTIPNEUMOCOCCICAL VACCINATION IN CATALONIA (SPAIN)**

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**OBJECTIVE:** Pneumococcal vaccine is an affective preventive intervention to prevent pneumococcal pneumonia. In this study, cost-effectiveness of pneumococccial vaccination (23 serotypes) strategies in individuals aged 5 or more years was assessed. **METHODS:** Cost-effectiveness was measured in terms of cost per life year gained (LYG), comparing net programme costs and effectiveness. The net programme cost was calculated from vaccinating costs, assuming 70% compliance, less reduced health costs from pneumococccial pneumonia achieved with the programme. Vaccination costs were calculated taking into account a cost of €11.51 per vaccine. Costs and benefits were estimated for 1996 using a 5% discount rate. **RESULTS:** A cost-effectiveness ratio of €9,023.27 per LYG was obtained for the universal vaccination of the population. The cost-effectiveness ratio was €113,177.12 per LYG in individual aged 5–24 years, €19,482.51 per LYG in those aged 25–44 years, €7,122.80 per LYG in those aged 45–64y < 0 in those aged >64 years. In the age group of >64 years, disease costs reduced were higher than vaccination costs, with a savings/costs ratio of 1.58. Results of cost-effectiveness analysis were sensitive to the vaccine price, vaccine efficacy and the percentage of pneumonias caused by S. pneumoniae, being less sensitive to health costs from pneumococccial pneumonia, hospitalization rate in patients with a community acquired pneumonia and vaccination compliance. **CONCLUSION:** Results obtained in this study shows that pneumococccial vaccination should be a priority preventive intervention in individuals aged >64 and 45–64 years.

**PIN 18**

**RELEVANCE OF COMPLICATIONS AS COST DRIVERS OF VARICELLA**

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**OBJECTIVES:** For many diseases, a small number of complicated cases accounts for the main part of the costs. Our aim was to investigate the relevance of complications for the overall costs of varicella in Germany in order to assess whether vaccination strategies targeting at risk groups, e.g. adolescents, have the potential to substantially reduce the economic burden of varicella. **METHOD:** A decision-analytic model, the Economic Varicella Vaccination Tool for Analysis (EVITA), was used to analyze epidemiological and economic effects of varicella over a period of 30 years as varicella incidence fluctuates over time and, thus, a typical cost of illness study performed in one year might provide biased estimates of overall costs. Input data on the epidemiology of varicella and its complications as well as the respective resource use were derived from two large surveys. **RESULTS:** Complications occur in 5.7% of the annual average of 739,000 cases. Overall annual costs are €187.5 million from the societal and €78 million from the payers’ perspectives. From the payers’ (societal) perspective 32.0% (24.7%) of the overall costs can be attributed to complications. Complications account for 53.8% (53.3%) of the direct medical costs and 15.5% (18.3%) of the indirect costs. When complications occur, inpatient care (67.7%) from the payers’ and work loss (60.9%) from the societal perspectives are the main cost drivers of complications. Pneumonia accounts for the majority of the costs of complications. For uncomplicated courses of varicella, the indirect costs of work loss are the major cost factor. **CONCLUSIONS:** Complications account for a disproportionate part of overall disease costs. However, uncomplicated courses account for the vast majority of costs. Vaccination strategies targeting only on risk groups with high risks of complications might therefore fail to substantially reduce the considerable economic burden of varicella.

**PIN 19**

**COST BENEFIT ANALYSIS ON VACCINATION FOR MEASLES IN JAPAN**

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**OBJECTIVE:** In Japan, measles vaccine coverage is lower than 80% nationwide. As a result, the number of measles case is estimated about 100,000–200,000 a year. In this study, we performed cost-benefit analysis between the cost of vaccination and the cost of treatment of measles. Although cost effectiveness analysis including cost-benefit analysis of vaccination is extensively performed (e.g. influenza), it is not carried out concerning measles at all. This research is unique in this point of view. **METHODS:** We conducted chart investigation of 291 measles patients (171 outpatient cases and 120 hospitalization cases) in one hospital from July 1997 to September 2001. Among them, medical expenses were calculated about 121 samples of outpatients and 112 inpatients which are considered to be appropriate for the contents of medical treatment. At the same time, we estimated opportunity